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Elite athletes in flow: The psychology of optimal sport experience

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ELITE ATHLETES IN FLOW: THE PSYCHOLOGY OF OPTIMAL SPORT EXPERIENCE

by

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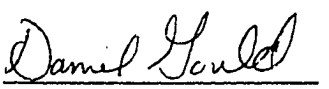

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An interpretive investigation of flow was conducted, involving both qualitative and quantitative methods of inquiry. The underlying purpose of the investigation was to gain an in-depth understanding of the flow state as experienced by elite athletes, including knowledge of those factors which may help or hinder flow from occurring. Twenty-eight elite-level athletes representing seven sports--track and field, cycling, triathlon, swimming, rowing, field hockey, and rugby--were the participants in this investigation. The athletes had all competed at an international level in their sport. Fourteen of the athletes were from Australia and 14 from New Zealand. Fourteen were females, and 14 males. The age range of the athletes was 18 to 35 years.

Four purposes were addressed. The first purpose was to examine the flow state as it is experienced by elite athletes, and to ascertain whether athletes' experience of flow paralleled Csikszentmihalyi's (1990) model of the flow state. A combination of deductive and inductive content analyses of the 336 descriptors of flow confirmed that athletes' flow experiences did parallel the theoretical descriptions of flow forwarded by Csikszentmihalyi.

The second purpose of this investigation was to examine possible antecedent and preventive flow factors. Inductive content analyses of athletes' responses to questions about what helps, prevents, and disrupts flow, resulted in 10 dimensions that synthesized the 361 themes suggested by the athletes. These themes and dimensions provided insight into factors that may influence the occurrence of flow for elite athletes. For example, some of the more salient factors influencing whether or not flow occurred included: preparation, both physical and precompetitive/competitive plans; confidence; focus, how the performance felt and progressed; and optimal motivation and arousal level, both of which were influenced by the balance between perceived skills and challenges in a situation.

The third purpose of the investigation was to examine the perceived controllability of flow. The majority of the athletes perceived flow state to be controllable. An examination of the themes forwarded by the athletes for helping, preventing, and disrupting flow resulted in the following percentages of perceived controllable factors: 82% of the factors helping flow, 69% of the factors preventing flow, and 28% of the factors disrupting flow.

The fourth and final purpose of the investigation was to examine the relationship of flow to peak performance and peak experience. There was support from both quantitative and qualitative analyses for the idea that these experiences more often occur together than independently for elite athletes. There was little support for the idea that these experiences are independent, experientially-defined events, as has been found in previous research with nonathlete populations by Privette and Bundrick (1991).

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CHAPTER I

INTRODUCTION

One would assume that understanding the sport experience of athletes is a primary focus of the field of sport psychology. However, experience generally gets neglected both in research and practice due to an emphasis on sport behaviors, particularly outcome behaviors. It shall be argued here that understanding experience deserves a more prominent role within sport psychology. Giving primacy to the experiencing qualities of the person involves a focus on subjective states as they are situationally evoked, the person's ability to choose and reject alternatives, and the processes by which the person finds, makes, and organizes meaning from the world (Rosini, 1977). To extrapolate this definition to sport experience, the concern becomes one of seeking to understand athletes' subjective states in different sport situations, how athletes make choices, and find meaning in their participation.

The focus of this investigation is to attempt to develop an in-depth understanding of athletes' optimal experiential states during their sport participation. This optimal state has been labeled flow (Csikszentmihalyi, 1975), although there has been little systematic application of the flow concept to sport settings. Understanding how flow is experienced by athletes, and examining whether athletes can identify characteristics that might lead to or disrupt flow, are major purposes of this study.

Flow is a term used haphazardly in sport psychology literature, often used synonymously with either "peak performance" or "peak experience". This has served to cloud, rather than clarify, its meaning. Privette and Bundrick (1991) have undertaken extensive descriptive and empirical analyses of the constructs of flow, peak performance, and peak experience, which has resulted in distinct conceptual definitions, albeit with some

overlapping characteristics. A further purpose of this investigation is to attempt to delineate these constructs in a sport context.

The data on which this investigation is to be based will be primarily qualitative in nature. To understand subjective experience, methods which allow the researcher to enter into the subjectivities of the participants offer much more promise than those designed to distance and objectify the researcher from the researched. The goal of interpretive inquiry is to enter into the subjectivity of the person, to attempt to see how that person sees the world, makes sense of it, and defines meaning for him or herself (Shapiro, 1991). Because understanding the subjective experiences of the participants is the goal of this investigation, the research paradigm most suited to this endeavor, interpretive inquiry, will be followed as the guiding framework for research design and analysis.

Statement Of The Problem

The relative inattention to experience, and more particularly, to positive or optimal experiences, in sport psychology has resulted in a limited understanding of how athletes understand, interpret, and obtain meaning out of their sport encounters. While there is growing literature demonstrating the influence of negative states of consciousness on sport performance and continuing participation (e.g., the anxiety-performance literature), there is little known about the relationship between optimal states of consciousness and performance, or how optimal states may influence continuing motivation and participation in sport.

Although it has not been extensively studied, journalistic accounts are replete with references to optimal or peak experiences in sport. The idea of an optimal experiential state while performing in sport is given such popular terms as being "in the groove", "in the zone", even "in flow". However, just what being in flow means to an athlete or for an athlete is not clearly known, and this lack of clarity is related to ambiguous use of the term, flow, in sport. Flow is used interchangeably with peak experience and also with peak

performance. Although sharing some common characteristics, these concepts may be distinct phenomena, and a better understanding of flow states may occur if the relationship between these concepts is better understood.

Purpose

The primary purpose of this investigation is to conduct an in-depth examination into flow as experienced by athletes. How is the experience of flow understood, interpreted, and given meaning by athletes? How does the flow state relate to performance quality? To quality of experience? Csikszentmihalyi and associates (1975; Csikszentmihalyi & Csikszentmihalyi, 1988) have predicted that flow occurs when challenges and skills are in balance and of a personally high level. Csikszentmihalyi (1990) has also described eight components of flow. Through assessing perceived challenges and skills and analyzing the fit of these eight components to athletes' optimal experiences, it will be possible to assess the relevance of Csikszentmihalyi's model for elite athletes.

If flow is linked to optimal performance and is interpreted as an optimal experience by athletes, it would be a highly desirable goal to know which factors athletes perceive are most important for helping them to get into the flow state, and which factors are perceived to prevent or disrupt flow. Thus, a second purpose of this study is to investigate antecedent and preventive flow factors.

In addition to knowing which factors athletes perceive are important for getting into or hindering flow, this study will attempt to delineate between those factors perceived as controllable or uncontrollable antecedent and preventive characteristics. Controllable, or potentially controllable characteristics, could be focused on as areas of development in order to maximize optimal performance and positive experiences for athletes. A third purpose of this study, therefore, is to distinguish between flow characteristics athletes perceive as controllable from those characteristics of flow seen as uncontrollable.

Finally, this study will attempt to clarify the relationship between flow, peak performance, and peak experience. This fourth purpose is of a more exploratory nature than the others. Because this study is concerned with understanding flow, it is important that this concept is defined clearly and distinguished, if possible, from like concepts.

Hypotheses and Research Questions

Purpose 1

The first purpose of this investigation is to understand how flow is experienced by athletes. Based on theoretical descriptions of flow by Csikszentmihalyi (1975, 1990), and on previous work by the investigator (Jackson, 1992; Jackson & Roberts, 1992), it is hypothesized that:

1. Athletes' descriptions of flow states parallel the model of flow described by Csikszentmihalyi (1990). That is, the eight components and end result of these components, an autotelic experience, are relevant to and can explain how athletes experience flow.
2. In accordance with Csikszentmihalyi's (1990) prediction, challenges and skills are in balance and at a high level for athletes' flow experiences.

Purpose 2

The second purpose of this investigation is to examine possible antecedent and preventive flow factors. This purpose has three subpurposes:

1. To examine factors athletes perceive help them get into flow;
2. To examine factors athletes perceive prevent them from getting into flow; and
3. To examine factors athletes perceive disrupt their flow states.

Purpose 3

The third purpose of this investigation is to examine which, if any, of the antecedent and preventive flow factors athletes perceive themselves as having control over.

Purpose 4

The fourth purpose of this investigation is to investigate the relationships between flow, peak performance, and peak experience. Due to the uncertainty and points of disagreement in the theoretical and empirical literature, this purpose is of an exploratory nature. The following research question is asked:

1. Are flow, peak performance, and peak experience recognized by the athletes as independent, experientially defined events?

CHAPTER II

REVIEW OF LITERATURE

Overview

This review of literature is organized around the following themes:

i) Optimal Experience as a Meaningful Subject of Psychological Inquiry;

ii) Understanding the Concept of Peak Experience;

iii) Understanding the Concept of Peak Performance;

iv) Understanding the Concept of Flow;

v) Interrelationships and Distinguishing Characteristics of Flow, Peak Performance, and Peak Experience;

vi) Understanding Subjective Experience: The Interpretive Research Paradigm.

Optimal Experience as a Meaningful Subject of Psychological Inquiry

The study of subjective experience: of people's thoughts, feelings, sensations--any information that effects a discriminable change in awareness (Csikszentmihalyi, 1982)--is central to the task of psychology. That is, a psychology which includes the study of behavior and experience. Such a definition has been argued strongly for by humanistically-oriented psychological researchers (e.g., Landsman, 1977; Privette, 1983; Rosini, 1977). As Rosini points out, the person is both a "behaver" and an "experiencer", and therefore, both are, or should be, important objectives for psychological research. Experience often seems to fall under the behavior umbrella, but Privette and Bundrick (1991) argue that experience is more comprehensive than behavior--and less global than personality. Csikszentmihalyi (1982) presents a strong reminder that subjective experience is the

essence of life, that the quality of our subjective experience has implications for how we view our lives:

> It is useful to remember occasionally that life unfolds as a chain of subjective experiences. Whatever else life might be, the only evidence we have of it, the only direct data to which we have access, is the succession of events in consciousness. The quality of these experiences determines whether and to what extent life was worth living. (p. 13)

If experience is so central to human life, why has it been neglected by psychology in favor of a focus on the study of behavior? Csikszentmihalyi (1982) attributes this state of affairs to the false assumption that what people do is more important than how they feel. Two reasons may account for this. First, for an individual looking out at others, behavior does take precedence over inner states. We are generally less interested in knowing how others feel than in what they will do. But, says Csikszentmihalyi, the reason for this actually demonstrates the centrality of experience: other's behavior has a direct impact on our experience. Secondly, Csikszentmihalyi contends that behavior is a more reliable measure of other's states than are their reported experiences. But the paradox occurs here also, for when one reflects on one's own inner experience, subjective feelings become a more reliable measure of the condition of the person.

Privette and Bundrick (1991) present a somewhat more pragmatic explanation for the relative neglect of the study of experience. It is, as these authors say, "a perennial research challenge". Yet it is an important area to understand, which leads to a further reason for inattention to experience: The methods and assumptions of positivistic science do not easily lend themselves to the study of experiential phenomena. Positivism asserts an objective reality, and contends the central task of scientific inquiry is to objectify what is "out there in the real world". A concept as intangible to positivism as human experience is either denied existence or trivialized with reductionistic methods.

Fortunately, alternative approaches to scientific inquiry have been recognized as viable options and in some disciplines, serious contenders to the once dominant positivistic paradigm. Subjective experience and objective science juxtaposed present more than a hint of incompatibility. As Csikszentmihalyi (1982) points out, how can psychology be objective when subjectivity is the paramount feature of the object being investigated?

The present investigation follows in the path of nonpositivistic approaches to scientific inquiry. The paradigm of choice is interpretive inquiry, which sets out to enter into the subjectivity of the person, in order to understand how the person understands, interprets, and reacts to the world in which she or he is placed. Further, a particular quality of human experiencing is the focal point of interest in this study: the optimal or positive experiences of human life.

In addition to giving primary attention to behavior and relatively less attention to experience, psychology has focused on the negative, or pathological side of human behavior, almost to the exclusion of the positive, or supra-normal characteristics of humans. Freudian psychoanalysis, a cornerstone of modern-day psychology, set an unfortunate precedent with a myopic focus on psychopathology. Even if Freud's ideas are accepted as valid, at best all they can offer is a "cure" of psychopathology. Maslow (1964) expressed well the limitations of Freudian psychoanalysis:

> It does not supply us with a psychology of the higher life or of the "spiritual life", of what the human being should grow *toward*, of what he can become. (p.7)

Freud's approach did not provide answers to questions of the higher potentials of humans. Behaviorism, another dominant paradigm for psychological study, denied the very questions of optimal experiences. The traditional behaviorist rejected inner

experiences of any kind as being unscientific, since such data are not objective or directly observable (Hall & Lindzey, 1978; Skinner, 1972).

A humanistic approach to psychology is often termed the "third force" (Hall & Lindzey, 1978), in reaction to both behaviorism and psychoanalysis. Maslow (1964, 1968), a leading figure in humanistic psychology, argued strongly for an expanded conception of science and psychological study. Maslow was interested in understanding the other side of the human picture that psychology had thus far ignored: the impulse toward growth, or actualization of potentialities. Maslow sought to understand people who had, or were in the process of, realizing their potentialities. This was a necessary task to developing a more complete and comprehensive science of the human person, according to Maslow. The name given to such people was self-actualizers. A characteristic of self-actualizing people is a tendency toward a special type of experience, to which Maslow gave the name, peak experience. The peak experience is akin to self-actualization in action. The discovery, and description of the peak experience was a realization of the goal of understanding the optimal experiences of humans.

Understanding the Concept of Peak Experience

The peak experience is an optimal experience. To understand the peak experience, Maslow (1968) asked people to think of the most wonderful experiences of their lives, described as involving happiest moments, ecstatic moments, or moments of rapture. They were to try to explain how they felt in such moments, and how these feelings differed from the way they felt at other times; how they were at that moment a different person in some way. Major characteristics of the peak experience found in Maslow's research (1968) included the following:

1. The experience or object tends to be seen as a whole, as a complete unit, detached from relations, from possible usefulness, from expediency, and from purpose. It is seen as if it were all there was in the universe.

2. There is total attention, complete absorption in the object or experience.

3. Perceptions are richer.

4. Perception is relatively ego-transcending, self-forgetful, egoless. Perception is organized around the object as centering point rather than being based around the ego.

5. The peak experience is felt as a self-validating, self-justifying moment which carries its own intrinsic value with it. It is an end in itself, an end-experience rather than a means-experience.

6. A disorientation of time and space occurs. In peak moments, the person is outside of time and space subjectively.

7. Peak experiences are experienced as being absolute. Not only are they timeless and spaceless, they are perceived and reacted to as if they were in themselves, "out there", as if they were perceptions of a reality independent of the person, and persisting beyond his/her life.

8. Cognitions are more passive and receptive than active.

9. The emotional reaction in the peak experience has a special flavor of wonder, awe, reverence, humility, and surrender before the experience as something great.

10. There is a perception of unity, either of the whole world, or of one small part of the world being perceived as if it were for the moment all the world.

11. Related to the above, there is an ability to perceive the whole and to rise above parts during peak experiences.

12. Perception in the peak moment tends strongly to be idiographic and non-classificatory. What is perceived tends to be seen as a unique instance.

13. There is a complete, though momentary, loss of fear, anxiety, inhibition, defense, and control.

It can be seen that in peak experiences, as described by Maslow, the person tends to become more integrated, more individual, more expressive, more easy and effortless, more

courageous, more powerful, and so on. The experience is intrinsically valid; it is perfect, complete, and needs nothing else. It is reacted to with awe, wonder, amazement, humility, and even reverence. According to Maslow (1968) the peak experiences are among the ultimate goals of living, as well as the ultimate validations and justification for doing so.

Maslow (1968) discusses the subjective experience the person undergoes in a peak experience, referring to it as an acute identity-experience. During the peak experience the person feels himself or herself to be at the peak of his or her powers, using all capacities to the fullest. The person is most here-now, most free of past and future, so that he or she is "all there" in the experience. Behavior and experience become "end-behavior" and "end-experience", rather than "means-behavior' or "means-experience".

The Study of Peak Experience in Sport Psychology

Ravizza (1973) criticized the lack of focus on the subjective experience of the athlete, and set about to address this deficiency by examining the peak experience in sport. He interviewed 20 athletes on their peak experiences in sport, defined as one's single most joyful, blissful moment while participating in sport. Ravizza based his definition of peak experience on that of Maslow (1968), and found many similarities between athletes' descriptions of peak experience in sport and Maslow's descriptions.

Ravizza (1984) described the qualities of the peak experience in sport as follows:

> The peak experience in sport is a rare personal moment that remains etched in the athlete's consciousness. It serves as a reminder of the great intrinsic satisfaction that sport participation can provide. Peak experiences during an athlete's career are relatively rare but their intensity acts as a standard, or qualitative reference point, for subjectively evaluating future performance. (p.455)

Three common characteristics were found by Ravizza (1984) to define the peak experiences of athletes. First, is the characteristic of focused awareness. During the peak experience, the athlete's concentration is so immersed in the activity that focus automatically adjusts to the task-relevant cues. Complete absorption is the height of

focused awareness, and frequently involves altered perceptions of time, space, and quality of experience. For example, the quality of the athlete's perceived experience is heightened by a quicker and clearer focus on movement cues. A present-centered focus means the athlete fully lives the experience. In addition, the focus is narrow, involving only the object of perception, which is observed from a nonjudging, nonclassificatory perspective. This centered focus is illustrated in the following statement from one of the athletes Ravizza (1984) interviewed:

> Right before I start, I totally block out various distractions. It's as if things are melting away . . . I think of the routine as a whole and it is just there and I am doing it." (p.455)

The second major characteristic of the peak experience in athletes found by Ravizza (1984) is the feeling of complete control of self and environment. The athlete experiences an internal power over his or her own movements and the obstacles the situation presents. Perfection is perceived for a moment, leading the athlete to an understanding of intrinsic satisfaction and self-validation. Feelings of control are also associated with loss of any fear, and the athlete becomes undaunted by past mistakes and any dangers inherent in the sport.

The third defining characteristic Ravizza (1984) describes is a transcendence of self. Feelings of harmony or oneness with the movement lead the athlete to forget his or her self, as the self becomes totally integrated in the experience. There is no longer any distinction between the individual and the experience, which become a unified whole. For this to take place, the athlete has to surrender himself or herself to the experience. The athlete becomes noncritical and totally immersed in the experience. An Olympic cyclist interviewed by Ravizza described his feelings of integration as follows:

> I am at one with everything. There is no distinction between myself, the bicycle, track, speed, or anything. There is a oneness with everything. (Ravizza, 1984, p.458)

An important precondition to the peak experience in athletes described by Ravizza (1984) is a mastery of the basic skills of one's sport. The athlete must be beyond having to think about the technical elements of skill execution so that basic skills are able to be performed automatically. Total immersion in the activity cannot occur if the athlete is consciously criticizing ongoing performance. Therefore, when examining peak experiences in sport, interviewing athletes of a high skill level may be necessary to gain a complete understanding of the phenomenon.

Ravizza (1984) offers two reasons for the importance of studying the peak experience in sport. First, there is the possibility that greater personal fulfillment in sport increases the likelihood of improved performance levels. Peak experience may enhance performance because it gives insight into the nature of the athlete's consciousness when performing at an optimal level. The second rationale for studying peak experience in sport is because the experience itself is of such great personal significance to the athlete.

Conceptual Examination of Peak Experience

Privette (Privette, 1981, 1983, Privette & Bundrick, 1991) has undertaken extensive analyses of the three concepts, peak experience, peak performance, and flow. Privette and Bundrick (1991) defined these concepts as follows: Peak experience is optimal joy, peak performance is optimal functioning, and flow is an intrinsically rewarding experience. In the first stage of her research, Privette (1983) identified intended meanings related to the three concepts from research and theoretical literature. Through this descriptive literature analysis, Privette found both mutual and distinguishing characteristics of peak experience, peak performance, and flow. Personal descriptions from 123 adults were compared with the theoretical formulations (Privette & Bundrick, 1991) and generally supported the

literature descriptions. Respondents reported their peak experiences occurred in many different situations: sports, spiritual events, relationships, childbirth. The definition of peak experience resulting from Privette's work is: "intense joy, a moment of highest happiness that stands out perceptually and cognitively among other experiences" (p.6) This definition is closely aligned to how Maslow (1968) defined peak experience. However, Privette did not find complete agreement with all of Maslow's contentions regarding peak experience. Personal descriptions included emphasis on a strong sense of self and denial of loss of self. Peak experience was also found to be more active and interactive and less receptive and nonmotivated than expected from Maslow's notions.

The distinguishing qualities of peak experience found by Privette and Bundrick (1991) were: fulfillment, significance, and spirituality. Included in the fulfillment factor were feelings of ecstasy, intrinsic reward, positive afterfeelings, and a positive relationship to personal performance. Significance included personal understanding, expression, personal value, meaning, and spontaneity. The spirituality factor was described by items such as ineffable, sense of unity of self with environment, and loss of time and space.

To conclude this section on peak experience, it can be seen that the phenomenon has been described in detail, but only by a small number of researchers. There is a need for further investigation of this construct, to determine whether the characteristics found to describe peak experience are validated by a greater number of people. In particular, the work of Ravizza (1973) stands alone in sport psychology's investigation of peak experience in athletes. If the peak experience is as significant as the work of Maslow (1968), Privette (Privette & Bundrick, 1991), and Ravizza (1973) suggest it is, then much can be gained from continuing research in this area.

Understanding the Concept of Peak Performance

Peak performance is a state of superior functioning that characterizes optimal sport performance, resulting in personal bests and outstanding achievements (Jackson &

Roberts, 1992). It is what competitive athletes hope for, what coaches train their athletes for, and in recent years, it has become the responsibility of applied professionals in sport psychology to help athletes attain such a state.

Research has examined physical and psychological characteristics associated with peak performance. However, most of this research has been conducted at a descriptive level, with little attention directed toward the underlying conceptual bases of peak performance. Jackson and Roberts (1992) attempted to examine possible underlying conceptual bases to peak performance and found preliminary support for relationships between a mastery-oriented focus, experience of flow, and perception of peak performance. There is a need to better understand both why and how a peak performance occurs.

Conceptual Examination of Peak Performance

Privette and associates (1981, Privette & Bundrick, 1991) have extensively studied the concept, peak performance. She defines peak performance as optimal functioning, or full use of potential in any activity. Peak performance is important, according to Privette, because it describes the upper limits of functioning and provides a model for studying a range of questions pertinent to human performance, for example, excellence, productivity, creativity. Privette has identified critical components of peak performance through extensive research procedures aimed at bringing clarity to the understanding of this concept. Following the same procedures as were used in investigating peak experience, that is, comparing personal descriptions from 123 adults to theoretical descriptions of peak performance, Privette found two distinguishing characteristics of this construct: full focus and a sense of self in clear process. Although these two components may seem to form a somewhat paradoxical unit, Privette explains how they actually comprise an effective constellation of cognitive and affective elements:

> Focusing fully on the task at hand while simultaneously maintaining acute awareness of self and the clarity of the interactive process is the key component of peak performance. (p.16)

A unique aspect of the full focus found by Privette and Bundrick (1991) was that this process started with a "click" and continued to completion. Something claims full attention in the moment of peak performance, and absorption, intention, personal responsibility, and intensity characterize the ensuing process, states Privette. The second factor, sense of self in clear process, was found to involve a strong sense of self and a feeling of being all together in the moment of optimal functioning. Privette refers to the combination of the two factors, full focus and self in clear process, as a peak performance dyad, and states that this dyadic process has been a key to optimal performance in her previous research into peak performance (e.g., Privette, 1968, 1981). Privette describes the peak performance dyad in the following statement:

> In peak performance, there is absorbed concentration. The object stands out clearly. Yet, as an object comes into sharp focus, the person is not submerged in it but is strong and also aware of a unique self identity. . . Clear focus extends to clarity of the process itself: functioning becomes channeled between person and other and is an effortless and graceful flow. (p.181)

Other factors found by Privette and Bundrick (1991) to be important to peak performance included the following. Respondents endorsed a sense of significance, which included meaning, personal value, spontaneous action and thought. Fulfillment tied joy, intrinsic reward, and positive feelings afterwards to superior performance. The type of situations which were discussed by respondents as peak performances varied widely and included work-related activities, sports, crises, and relationships.

The Study of Peak Performance in Sport Psychology

Research with athletes has uncovered common physical and mental factors as characteristic of feelings experienced at moments of peak performance. For example,

Garfield and Bennett (1984) identified the following factors after interviews with elite athletes. Physical and mental relaxation, confidence, optimism, and feelings of being energized were reported. Similar to Privette and Bundrick's (1991) full focus, being focused on the present was important, involving harmonious integration of mind and body, with no thoughts of past or future. Extraordinary awareness of one's body, and a feeling of being in control without trying to be, parallel Privette and Bundrick's self in clear process. A feeling of being "in the cocoon", or completely detached from the external environment and any distractions was another distinguishing characteristic for the athletes in Garfield and Bennett's study.

Loehr (1984) interviewed 43 professional and recreational athletes on their psychological experience prior to and during an athletic experience. Loehr summarized the experiences reported to him when he asked athletes to describe their feelings when they were playing at their best as:

> It was like playing possessed, yet in complete control. Time itself seemed to slow down, so they never felt rushed. They played with profound intensity, total concentration, and an enthusiasm that bordered on joy. (p.67)

Williams (1986) reviewed the athletic peak performance literature and cited three research sources that have added to the knowledge base of this construct in sport psychology. One is subjective recall data of best performances, such as the work by Garfield and Bennett (1984) and Loehr (1984). The second source is from studies that have compared the psychological characteristics of successful and less successful athletes. Studies comparing such athletes from a range of sports (e.g., Gould, Weiss, & Weinberg, 1981; Highlen & Bennett, 1979; Mahoney & Avener, 1977; Meyers, Cooke, Cullen, & Liles, 1979) found some commonalities, the most consistent of which was higher levels of self-confidence for the more successful competitors. Other important factors included better concentration, with more successful athletes keeping a more task-oriented focus

versus a preoccupation with outcome thoughts or thoughts of messing up. In a more recent investigation of this protocol, Mahoney, Gabriel, and Perkins (1987) compared elite to less elite athletes. The main differences between these two groups were that the more elite athletes were better able to concentrate, were more self-confident, more motivated, and experienced less anxiety. They also relied more on internal kinesthetic imagery, and focused more on their own performance rather than the performance of their opponent. Thus, there is considerable similarity in the findings of studies comparing successful to less successful athletes. The more successful performer is better able to concentrate, is more self-confident, committed, and motivated. Internal imagery, a self-focused reference, and better coping skills further distinguish the elite performer.

The third source of peak performance information Williams (1986) discusses are the reports of elite athletes and coaches, when asked what it takes to make it to the top in their sport. For example, a study by Orlick (1980) identified two crucial ingredients for athletic excellence: commitment and self-control. Words such as desire, determination, attitude, heart, and self-motivation were used to describe commitment. Self-control meant being able to do things in big games and tight situations, through being able to stay calm, cool, confident, and maintaining composure.

Despite there being several different sources of athletic peak performance information, most of this research has been of an empirical nature. Little work has investigated theoretical relationships or conceptual bases to peak performance. In addition, much of this work has been general rather than focusing specifically on understanding the phenomena of peak athletic performance. Recent research offers more promise in this regard. For example, in a more specific analysis of peak performance, Cohn (1991) interviewed 19 professional and collegiate golfers on the psychological characteristics of peak performance in golf. Content analysis of the interviews revealed the following psychological qualities: narrow focus of attention; automatic and effortless performance; immersion in the present

moment; control of emotions, arousal, thought processes, behaviors; absence of fear of consequences; high self-confidence, relaxation, and a sense of fun or enjoyment. All of the respondents described the experience as temporary.

Jackson and Roberts (1992) also focused more specifically on attempting to understand peak performance, and to go beyond descriptive approaches to examining possible conceptual bases and theoretical relationships associated with peak performance. Two hundred collegiate athletes answered a questionnaire that assessed mastery and competitive goal orientations, perceived ability, flow, and experience in best and worst competitive performances. It was hypothesized that the psychological process of flow underlies peak performance and is associated with a mastery oriented focus and high perceived ability. These predicted relationships were supported by both quantitative and qualitative analyses. Analyses of athletes' best performances indicated a total focus on performance, and other characteristics of flow were key to the perception of a superior state of functioning.

Understanding the Concept of Flow

The concept of flow may offer a conceptual link between peak performance and peak experience. It is a concept that has surprisingly been neglected in sport psychology research, although it has received considerable attention by researchers interested in understanding optimal experiences in other life endeavors (see Csikszentmihalyi & Csikszentmihalyi, 1988).

Csikszentmihalyi (1975) developed the concept of flow after examining autotelic, or self-motivating activities. The type of activities Csikszentmihalyi studied included playing chess, rock climbing, rock dancing, and surgery. Csikszentmihalyi found in these activities complete involvement of the person with the activity, with respondents describing themselves as acting with total involvement, and experiencing a unified flowing from one moment to the next. The use of the term flow came from descriptions of involving experiences by respondents. The person in flow, while feeling in total control of

his or her actions, felt little distinction between self and environment. The word flow is a succinct way of expressing the sense of seemingly effortless movement characteristic of this experience.

The Characteristics of Flow

Csikszentmihalyi (1990) study of flow over the past two decades has produced a wealth of information about the construct through investigations ranging from in-depth interviews of individual's optimal moments to quantitative measurements of flow in daily experiences. Through this extensive research into flow, eight defining characteristics of this experience have been assembled. These are:

1. A challenging activity that requires skills. Flow is more likely to occur in activities that are goal-directed and bounded by rules--activities that require the investment of psychic energy, and that could not be done without the appropriate skills. Csikszentmihalyi (1990) describes the golden ratio between challenges and skills as the defining feature of flow. According to this ratio, a person's perceived skills are just right to cope with the demands of the situation, with these demands being above the person's average.

2. The merging of action and awareness. People become so involved in what they are doing that the activity becomes spontaneous, almost automatic. People stop being aware of themselves as separate from the actions they are performing. One acts with a deep but effortless involvement that removes from awareness the worries and frustrations of everyday life.

3. Clear goals. Goals are either clearly set in advance, or are developed out of involvement in the activity, so that the person has a strong personal sense of what he or she intends to do. During the activity, non-contradictory demands for action are perceived.

4. Unambiguous feedback. Immediate and clear feedback, not requiring analysis or reflection, allow for continuous involvement and action. The kind of feedback can be very diverse, but the result is the same: information that one is succeeding in one's goal.

5. Concentration on the task at hand. A complete focusing of attention on the task at hand is one of the most frequently mentioned dimensions of the flow experience. A select range of information is allowed into awareness, and this is directly related to the task being engaged in.

6. The paradox of control. Originally, this component was labeled "being in control". However, Csikszentmihalyi in his later work (1988; 1990) explains that it is the *possibility* of control, especially the sense of *exercising* control in difficult situations that people enjoy, not the feeling of *being* in control per se. Thus this dimension is termed the "paradox of control", for one feels in control without actively trying to be in control.

7. The loss of self-consciousness. Concern for the self disappears, as the sense of a self separate from the world around it is lost, making way for a feeling of union with the environment. This is possible because clear goals, stable rules, and challenges well matched to skills leave little opportunity for the self to be threatened. The absence of self from consciousness does not mean the person is unaware of what is happening in his or her mind and body--actually a very active role for the self is involved, with acute awareness of one's body often reported. What is lost is a consciousness of the self, the information normally used to represent to oneself who one is. The self is fully functioning, but not aware of itself doing it. Paradoxically, the sense of self emerges stronger after the flow experience is over.

8. The transformation of time. The sense of duration of time is altered, so that there is a sense that everything has either speeded up or slowed down. Objective measurement of time bears little resemblance to the experiential passage of time.

The end result of experiencing these dimensions, or "elements of enjoyment" as they are referred to in Csikszentmihalyi's 1990 book on flow is what Csizkszentmihalyi (1975, 1990) describes as an autotelic experience, a sense of deep enjoyment that is so rewarding people feel that expending a great deal of energy is worthwhile simply to be able to feel it.

The experience being an end in itself is key to flow. The term "autotelic" derives from two Greek words, "auto" meaning self, and "telos" meaning goal. It refers to a self-contained activity, one that is not done with the expectation of some future benefit, but simply because the doing itself is the reward.

The Conditions of Flow

How do flow experiences occur? Csikszentmihalyi (1990) explains:

> While such events may happen spontaneously, it is much more likely that flow will result either from a structured activity, or from an individual's ability to make flow occur, or both. (p.71)

That is, there are particular activities that are more likely to produce flow, and personal traits that help people achieve flow more easily. Factors that make activities conducive to flow include rules that require the learning of skills, goals, feedback, the possibility of control. Flow-producing activities facilitate concentration and involvement by making the activity as different from everyday reality as possible. Csikszentmihalyi (1990) illustrates this point with a unique perspective on the function of sport. He discusses how in sport competitions participants:

> . . . dress up in eye-catching uniforms and enter special enclaves that set them apart temporarily from ordinary mortals. For the duration of the event, players and spectators cease to act in terms of common sense, and concentrate instead on the peculiar reality of the game. (p.72)

Flow activities, such as sport competitions, have as their primary function the provision of enjoyable experiences. Through the way they are constructed, they help participants to achieve an ordered state of mind, in itself an enjoyable state.

Csikszentmihalyi (1990) describes how every flow activity he studied had the ability to:

> ". . . provide a sense of discovery, a creative feeling of transporting the person into a new reality. It pushed the person to higher levels of performance, and led to undreamed-of states of consciousness. (p.74)

It is interesting to note that this quotation implies a link with both what has been termed peak performance and peak experience. A flow activity can achieve such a positive state in a person by virtue of it providing opportunities for action that a person can act upon without becoming bored or anxious. If the demands of an activity are greater than one's skills, anxiety is the result. If, however, skills are greater than the challenges of the situation, boredom results. There is an optimal balance between skills and challenges in a flow activity. A critical qualification of this state of balance is that flow is not dependent on the objective nature of the challenges present, nor on the objective level of one's skills. Csikszentmihalyi (1975) states that whether one is in flow "depends entirely on one's perception of what the challenges and skills are" (p.50). This fact leads to the second condition that will affect whether flow occurs or not: an individual's ability to restructure consciousness so as to make flow possible.

Csikszentmihalyi (1990) states: "It is not easy to transform ordinary experience into flow, but almost everyone can improve his or her ability to do so." (p.83) A person, within the same objective situation, might move from being bored, to being anxious, to being in a state of flow, all within a couple of moments. It all depends on one's perception of a situation--what a situation means to a person at a particular time. Working from the described structure of a flow situation (that is, perceived balance between skills and situation), it is possible to return to a flow state once it has been interrupted by either increasing skills or decreasing challenges. Increasing skills, while being more difficult, allows for more opportunities and a higher level of capabilities. Within one particular situation, it is possible for a participant to restructure the environment to allow flow to occur. The same steps that are used to externally create the right structure can be employed internally to create flow: delimit reality, control some aspect of it, and respond to the feedback with a concentration that excludes everything else as irrelevant. For example, in a sport competition, an athlete can set personal goals that will facilitate flow; these goals can

also be re-adjusted during the competition if necessary, to enable the athlete to return to flow if the former situation was perceived as not allowing one's original goals to be met.

Csikszentmihalyi (1990) describes four rules for developing an autotelic self, derived directly from the flow model. These rules are:

1. Setting goals. To be able to experience flow, one must have clear goals to strive for. A basic difference between a person with an autotelic self and one without is that the former knows that it is he or she who has chosen whatever goal he or she is pursuing.
2. Becoming immersed in the activity. After choosing a system of action, a person with an autotelic personality grows deeply involved with what he or she is doing. To do so requires balancing the opportunities for action with the skills one possesses. Involvement is greatly facilitated by the ability to concentrate.
3. Paying attention to what happens. Concentration leads to involvement, which can only be maintained by constant inputs of attention. Having an autotelic self implies the ability to sustain involvement. Being free of self-consciousness greatly aids depth of involvement.
4. Learning to enjoy immediate experience. This ability flows from the autotelic self--learning to set goals, to develop skills, to be sensitive to feedback, to know how to concentrate and be involved in an activity.

Csikszentmihalyi (1990) points out that learning to enjoy immediate experience is not the result of a laissez-faire attitude to life. To transform an activity into flow requires the development of skills that stretch potential. Although the flow model (1975) suggested that whenever challenges and skills are in balance flow would occur, self-report data measuring flow throughout the day (Csikszentmihalyi & Csikszentmihalyi, 1988) did not confirm the theoretical predictions. Data were collected at random times throughout one's daily activities by subjects completing a flow questionnaire when an electronic pager they were wearing went off. This method of flow assessment is called the Experience Sampling Method (ESM). In what Csikszentmihalyi called a "conceptual and methodological

breakthrough in the measurement of flow" (p. 260), a modification of the original flow model (1975) was proposed. It was suggested that flow experiences only begin when challenges and skills are above a certain level and in balance. The personal mean for challenges and skills was used as the operational definition for the starting point above which the experience should start turning positive. A balance of challenges and skills at a low level would more likely lead to a state of apathy than flow.

Data from ESM studies fitted this flow model better than the original flow model. Csikszentmihalyi (Csikszentmihalyi & Csikszentmihalyi, 1988) states that the new flow model does not contradict the old model, it simply adapts it to the specific research design of the ESM. The ESM is a creative and valuable way to assess flow as it occurs in daily life experiences. However, there are limitations to using this approach to the study of athletes' flow experiences. Wearing electronic pagers is not a realistic idea for athletes, except perhaps in practice or recreational level participation. The disruption to an athlete's performance from having a pager go off at random times during one's performance makes it an unsuitable research tool. There is the possibility of having athletes complete the ESM questionnaire during breaks in performance, but this does not allow for the randomized assessments the instrument was designed for. A further consideration for measuring flow in athletic situations is that any "state" measurements of flow are going to disrupt the very experience the measurement is designed to assess. Retrospective assessments may be the most feasible way to assess flow in athletes.

In an investigation of flow in an elite athlete population, Jackson (1992) found respondents to have very clear memories of an optimal experience involving flow. In addition, the athletes were able to describe the flow state in general including it's antecedents and experiential qualities. Because being in flow stands out perceptibly from an average performance experience, it seems to remain etched in the person's mind, as a goal for future encounters. There is support for the idea that personally significant

experiences are remembered, even years after these experiences occurred. For example, Bloom's (1985) seminal work on talented people in diverse areas of involvement demonstrated the viability of retrospective interviews when they concern salient experiences in people's lives. Ashcraft (1989) presented evidence for the resilience of autobiographical memory for personally memorable events.

The athletes interviewed by Jackson (1992) were a highly skilled and experienced group, being United States national champions in figure skating. It is possible that a less highly skilled or experienced athlete population would not be as familiar or experienced with flow. The information obtained from Jackson's (1992) study of the flow experiences of elite figure skaters illuminated several important qualities of flow that the present investigation is designed to examine in more depth. Therefore, some of the more salient findings from the skating study will be presented below.

The Flow Experiences of Elite Figure Skaters

An opportunity to interview a highly elite group of athletes came about through the investigator's involvement in a research project focused on examining the experience of being a national champion figure skater (Gould, Jackson, & Finch, 1992). Being the interviewer in this project, the investigator was able to conclude the interviews with questions on perceptions of, and experience with flow. This was the first investigation of its kind to specifically examine flow states in elite-level athletes. Rich accounts of flow experiences were gathered, and information about perceived controllable flow state characteristics, as well as factors that disrupt flow, was collected.

The skaters studied represent a highly talented and very successful group of athletes. All have attained the highest level within their sport, being the best in the United States, arguably one of the strongest countries in the world in this particular sport. In addition, all of these athletes have competed at a world level, with many achieving a medal at World or Olympic Championships. There were six bronze medallists, and two gold medallists from

World and Olympic competition included in this sample. Thus, this study provides information about the flow experiences of athletes at the very top of their sport, arguably a rich data source for both athletes and those in sport psychology. In addition, this sample of athletes could be expected to have good understanding of, and experience with, flow. Due to their many years of experience (M = 13) and their outstanding skills, they are likely to have encountered many situations where challenges and skills have been of an equally very high level. Further, the nature of the sport may be conducive to flow, being of a continuous nature and involving creative expression, flowing movements, and some element of risk. Also, figure skating has a strong performing element as well as the competitive aspect. All of these characteristics create an activity where flow may be expected to readily occur. Investigating their experiences, therefore, should provide insight into how flow is experienced in sport.

The skaters were asked to describe an optimal experience in their skating, described as their most satisfying personal performance, the one they would want to remember for the rest of their lives. From these descriptions came very rich data about what it is like to be in flow. For example, one skater described the clarity, awareness, and perceived control of flow experiences:

> It was actually very real. . . I knew every single moment; in fact I even remember going down into a jump and this is awful but thinking, "Oh gosh! This is so real! I'm so clear in my thoughts". There was just a real clarity to it all. . . I felt in such control of everything, of every little movement, I was very aware, you know, like what was on my hand, I could feel my rings, I could feel everything, and I felt I had control of anything.

Another skater described the effortless focus and mind-body unison of flow:

> It was just one of those programs that clicked. I mean everything went right, everything felt good. . . it's just such a rush, like you feel it could go on and on and on, like you don't want it to stop because it's going so well. It's almost as though you don't have to think, it's like everything goes automatically without thinking. . .it's like

> you're in automatic pilot, so you don't have any thoughts. You hear the music but you're not aware that you're hearing it, because it's a part of it all.

The skaters' descriptions of their optimal skating experience provided strong evidence that the experience of flow qualities in the performance they chose to discuss made this performance as memorable as it obviously was to them. It was exciting to hear the skater describe experiences that embodied the theoretical descriptions of flow. A further example from a skater's description of their performance illustrates this correspondence:

> The focus was so narrow, because my partner was in the same focus, and it was just she and I skating . . . Everything else goes away, it almost happens in slow motion- even though you're doing things at the correct time with the music and everything. Nothing else matters, it's just such an eerie eerie feeling.

To gauge whether the term flow was a familiar one to the skaters, and to get an idea of what the term signified to them, questions were asked about knowledge of flow, and what being in flow meant. Although most of the skaters were not immediately familiar with the term flow, they all agreed that flow was an apt descriptor of their experience. For example, this is one skater's reaction to the term:

> I like that (term). In flow, sounds peaceful. . . it sounds correct. It's kind of spiritual. A lot of people use the word "in sync"--I don't really like that. Or people say "the performance of a lifetime". . . they all sound so cliche. Flow doesn't sound cliche because the feeling isn't cliche, you know? The feeling is really wild. . . you feel like you completely abandon everything, you push harder than you ever push, you're not afraid that anything bad is going to happen.

The skaters spoke with lucidity about how flow brought about a special experience. Here is how another described it:

> It's a connection, you know when it's working. It's just really positive. It's electricity. There's not an inch of body space misplaced. You're just there. You're in the groove. Your knees are moving. Your nerves, you've taken them from where they're practically freaking you out to put them into. . . they work their way up your body to your face so your face is just electric.

From the above quotes it can be seen that the skaters often had their own terms to describe flow. For example, "it clicked", "automatic pilot", "a connection". Others called it "riding that wave", "in a groove", "riding that razor". It was quite clear that the experience of flow was highly valued and perceived as an important component of how well they performed. All 16 of the skaters interviewed agreed that there was a positive relationship between flow and performing well. However flow was not considered necessary to good performance by all the skaters, with over half stating they could still perform well when not in flow.

For the optimal experience described by the skaters, introduced as "your most satisfying performance, the one you would want to remember for the rest of your life", both personal descriptions and objective assessments confirmed that the performance involved being in flow. Challenges and skills were closely matched and at a very high level: 9.3 for challenges and 9.1 for skills on a ten-point scale. Scores on the flow scale developed by the investigator from a previous investigation (Jackson & Roberts, 1992) to assess the components of flow as described by Csikszentmihalyi (Csikszentmihalyi & Csikszentmihalyi, 1988) were consistently high. A ten-point likert scale was used, ranging from the item having no importance (0) to being extremely important (10). Mean scores across all items ranged from 7.7 to 9.6. Even though the scales contained some different items, the same characteristics strongly endorsed by the first sample, 200 collegiate athletes (Jackson & Roberts, 1992) were also rated high by the skaters. These items were:

1. My attention was focused entirely on what I was doing.
2. I knew clearly what I was supposed to do.
3. My mind and body seemed to be working in perfect unison.
4. It didn't take an effort to keep my mind on what was happening.
5. I was in control.
6. I really enjoyed the experience.

Other items not included in the first study, but added on the basis of further reading of Csikszentmihalyi (Csikszentmihalyi & Csikszentmihalyi, 1988; Csikszentmihalyi, 1990) that were also strongly endorsed by the skaters included:

7. I got direct clues (feedback) as to how well I was doing.
8. I had a deep but effortless involvement.
9. Time seemed to alter (either slow down or speed up).
10. I was at the cutting edge between my ability and the skills I was performing.

Only one item was given a rating less than eight (7.7). This item was:

11. I am not self-conscious.

The lower rating given to this item seemed to reflect the ambiguity surrounding what being self-conscious is. Csikszentmihalyi (Csikszentmihalyi, 1990) describes how loss of self-consciousness in flow does not involve a loss of *self* per se, but of *concept* of self. A very active role for self, where awareness is extremely high and clear, has been found by Csikszentmihalyi during flow. The skaters may not have been able to clearly differentiate these two aspects of the self, which may have accounted for the wide range of responses to this item (0-10). Clearly, different wording for this item is needed to more adequately tap into this dimension of flow.

In addition to rating the flow scale items, the skaters were asked to describe the most important factors they perceived for getting into flow. An inductive analysis of their responses was conducted. This involves categorizing the raw data themes, which in this case were the quotations of the skaters, into like themes. These themes are then categorized into like higher-order themes, and from like higher order themes into general dimensions. Thus, the process is one of building more general themes from grouping like ideas. The inductive analysis resulted in the following dimensions:

- Positive Mental Attitude
- Positive Pre-Competitive and Competitive Affect

- Maintaining Appropriate Focus
- Physical Readiness
- Partner Unity (pairs and ice-dancing)

When asked later which, if any, characteristics of flow were perceived as controllable, a very similar list to the former was found. Partner unity was perceived as uncontrollable, and two additional uncontrollable factors were mentioned: one's Physical State, and Crowd Response.

The final aspect of flow experiences addressed in this study was to learn about the factors the skaters perceived as disrupting, or breaking flow. An inductive analysis resulted in the following group of flow disrupters:

- Physical Problems/Mistakes
- Inability To Maintain Focus
- Negative Mental Attitude
- Lack Of Audience Response

In summary, the qualitative data obtained from the figure skaters provided a rich source of information about how flow is experienced, and what factors are important to flow, either as antecedents, experiential qualities, or disrupters. The level of skill of the athletes interviewed is a strength of this particular study. Some of the skaters had retired from competitive skating when interviewed, which may have affected recall of experiences. This is a potential weakness of the skating study. Having athletes from one sport is both a strength and a limitation in terms of extrapolating the findings. On one hand, the consistency in the skaters' responses increases confidence in the credibility of the major themes drawn from the interviews. On the other hand, applicability of the findings is limited until research conducted with different athlete populations confirms (or disconfirms) the results found in one particular sport. Thus, there is a need to conduct further research with elite athletes (who are currently competing) from different sports, as there is a need to

examine athletes from a variety of skill levels. The present investigation is designed to address the first need, which is considered the next best step to take in furthering understanding of flow experiences in athletes. The findings from the skating study will provide a good background to the present investigation, and will also provide a source of comparison for the data to be gained in this investigation.

Interrelationships and Distinguishing Characteristics of Flow, Peak Performance, and Peak Experience

The above review of the peak experience, peak performance, and flow literature demonstrates that the three experiences share much in common. All three experiences involve the person fully with the situation, and from this absorption results a very positive experience, one which seems to be intrinsically rewarding. However, the various research conducted on these phenomena has shown some differences among the three experiences. Privette and Bundrick (1991) designed a table from which it is possible to compare the mean scores given by her respondents to the items in the Experience Questionnaire (Privette, 1984), an inventory of descriptors of flow, peak performance, and peak experience, derived from the literature on these constructs. This table is included (Table 1) to provide a clearer picture of how the three constructs were found by Privette and Bundrick to be either similar or different. It will also provide a source of comparison for the data to be collected in this study using Privette's questionnaire.

The criteria used for assessing the mean scores for each item are included below Table 1. In this table, items are grouped with the factor on which they are most heavily loaded. The source of items in theoretical and research literature (e.g., peak experience) is designated by underlining in the appropriate column(s). It may be seen in Factor 1, for example, that the items, "clear inner process" and "felt all together" are theoretically associated with all constructs--peak experience, peak performance, and flow; whereas the source of "clear focus" and "strong sense of self" was associated with the peak

Table 1

Correspondence of Data and Theoretical Constructs: Peak Experience, Peak Performance, and Flow (n = 98-103).*

Factor Item	Peak Experience	Peak Performance	Flow
Factor 1: Self In Clear Process	*	**	*
• clear inner process	*	**	*
• felt all together	*	*	*
• awareness of power	*	**	*
• clear focus	*	**	*
• strong sense of self	*	*	*
• free from outer restrictions	**	*	*
Factor 2: Full Focus	*	**	*
• need to complete	*	**	*
• absorption	*	*	*
• intention	*	*	*
• personal responsibility	*	*	*
• overwhelmed other senses, thoughts	**	*	0
• event an emergency	0	a	0
• intensity	*	*	*
• process "clicked" on	*	**	
Factor 3: Significance	**	*	0
• significance	**	*	
• meaning	*	*	
• personal understanding, expression	**	*	0
• personal value	**	*	0
• actions, thoughts spontaneous	*	*	*
• event was practiced		*	*
Factor 4: Fulfillment	**	*	0
• after feelings	*	*	*
• feelings	**	*	*
• performance	*	*	*
• fulfillment	**	*	*
• intrinsic reward	*	*	*
Factor 5: Spirituality	**	*	0
• loss of self	0	0	0
• ineffable	**	*	0
• spiritual	**	*	0
• brief			
• loss of time and space	*		
• differences resolved	0	0	0
• unity of self and environment	*	*	*

Factor 6: Other People	*	0	*
• enjoyed others	*		*
• others influenced outcome	*	*	*
• others contributed	*	*	*
• interactive	**	*	*
• encounter with person or something	*	*	*
• spontaneous, not planned			
Factor 7: Play	*		**
• prior related involvement	0	*	*
• playful		0	**
• fun	*		**
• action or behavior	**	*	*
• actions, thoughts new, not habitual	**	*	
Factor 8: Outer Structure	*		*
• perceptual, not behavioral			0
• receptive and passive	0	0	0
• rules, motives, goals in structure		*	*
• event nonmotivated	0	0	0

* Adapted from Privette and Bundrick (1991)

Notes.
1. Underlining indicates the theoretical source of items and inferentially of factors. Underlining predicts endorsement. Double underlining of a factor indictes that all heavily loaded factors are underlined, and strong endorsement is predicted.
2. ** = both uniquely high mean score (ANOVA, SNK, alpha = .05) and mean score for item > 3.5 (5.0 scale).
3. * = mean score for item > 3.5.
4. 0 = mean score for item < 2.5.
5. a = uniquely high mean score, but < 3.5.

performance literature. High mean scores were predicted for the items and factors that are underlined. An '*' signifies that a high mean score was obtained for the item or factor from the personal descriptions data.

Another method Privette and Bundrick (1991) have suggested for differentiating flow, peak performance, and peak experience is using gradients of performance and feeling as identifying markers for experientially-defined events such as these. From this perspective, peak performance and peak experience are positive extremes of performance and feeling, respectively. Using this system of identifying experiences, the opposites of peak performance and peak experience, failure and misery (Privette & Bundrick, 1991), form opposite ends of the continuum to their positive counterparts. Privette suggests that flow is not identified by a specific gradient of either feeling or performance, but probably involves both positive performance and positive feeling, and possibly extremes of either or both.

To distinguish flow from peak experience and peak performance, Privette and Bundrick (1991) described the factors that respondents in their study endorsed most strongly for flow. Play was the strongest factor to distinguish flow from peak performance and peak experience. Flow was found to be uniquely fun and playful. It was characterized as active and followed prior involvement. Another factor to distinguish flow from peak performance and peak experience was the role of other people. This factor was endorsed by respondents, who described flow as interactive and their interactions with others as enjoyable. The contribution of others was seen as important to flow events. A third factor which characterized flow was outer structure, which is likely considering flow occurred in activities with built-in rules, motives, and goals.

Several factors expected to be endorsed from theoretical descriptions of flow were not strongly endorsed by the participants in Privette and Bundrick's (1991) study. Significance, fulfillment, and loss of self were not endorsed, and self in clear process and full focus were only moderately endorsed. These unexpected findings may be related to the

stimulus question Privette used when asking respondents to describe a flow experience. The stimulus question used was "the last time you played a sport or game". This stimulus question was used because Csikszentmihalyi (1975) identified sports and games as activities where flow is most readily experienced. However, anyone who has participated in sport is well aware of the fact that flow is often not experienced at these times. Flow needs to be more clearly specified, but the problem that occurs when trying to be more specific is that flow can be linked too closely to either peak performance or peak experience by emphasizing the positive performance or feeling state of these two experiences respectively. For example, full focus and self in clear process, the two distinguishing characteristics of peak performance, are also factors endorsed in flow experiences, although to a lesser intensity than in peak performance. And in peak experience, fulfillment, significance, and to a lesser extent, spirituality are factors which could be expected to be endorsed in flow, although the data in Privette's study did not support this. To what extent can the three experiences be distinguished? There are certainly overlapping characteristics, such as absorption, joy, spontaneity, a sense of power, and personal identity and involvement (Privette & Bundrick, 1991). Privette (1983) recognized absorption, attention, or clear focus as the quality most characteristic of all three experiences:

> Overwhelming other senses, this perceptual set is critical to full involvement that results in superior functioning in peak performance and is perhaps equally pertinent to enjoyment and joy in flow and peak experience. (p. 1366)

Trying to distinguish these three concepts appears to be a more difficult task than examining their similarities. It is interesting to reflect on which two of the three experiences may be more similar to each other than any other pair. Peak performance and peak experience both involve positive extremes of either performance or feeling, which makes them appear most similar at first glance. However, while the intensity of the

experience may be at a similarly high level, the content of experience is very different: performance versus feeling. Peak performance and peak experience may occur simultaneously, but one is not necessary for the other.

The same holds true for peak performance and flow: it may be quite possible to have a peak performance in a non-flow state. It may also be possible to experience flow and not necessarily perform at a high level, although by definition the challenges and skills are both high during flow, making it likely that a high level of performance will occur.

Peak experience and flow may be the most similar of the three experiences. Peak experience seems to encompass flow, to perhaps be a high-level flow experience. Csikszentmihalyi (1975) distinguished between two kinds of flow experiences: microflow and macroflow. Microflow occurs during "the simple unstructured activities that people perform throughout the day" (p.54), and Csikszentmihalyi states further that these activities appear to give little positive enjoyment but are nonetheless important for normal functioning. Examples given for microflow include watching television, stretching one's muscles, taking a coffee break. Macroflow occurs during complex, structured activities. Among activities Csikszentmihalyi has studied as macroflow activities are rock-climbing, chess, dancing, and conducting surgery. Csikszentmihalyi suggested flow occurs on a continuum, ranging from "repetitive, almost automatic acts. . . to complex activities which require the full use of a person's physical and intellectual potential." (p.54)

In his later work, Csikszentmihalyi (Csikszentmihalyi & Csikszentmihalyi, 1988) uses the term, optimal experience to denote flow. This is based on research conducted (see Csikszentmihalyi & Csikszentmihalyi, 1988) which Csikszentmihalyi believes demonstrates the fact that flow "is generally an optimal state" (p. 364) Csikszentmihalyi continues, "In flow, most of the dimensions of experience reach their positive peaks", and ". . . it is not enough for flow to be a *positive* state of consciousness. It should be an *optimal* experience, one of the best states - if not *the* best, then at least on a par with those

homeostatic rewards we call "pleasure". " (p. 368) Thus, it seems as though Csikszentmihalyi, by linking flow with optimal experience, is including as flow experiences those qualities that are generally reserved for peak experience. There is, therefore, some disagreement between Csikszentmihalyi's use of the term flow and Privette's (Privette, 1983, Privette & Bundrick, 1991) descriptions of flow as separate to peak experience. Privette's analysis of peak experience and flow did reveal many common data points, including moderate endorsement of the factors self in clear process, full focus, and the importance of other people. The main differences were the lack of endorsement of significance and spirituality, and the lesser endorsement of fulfillment, in flow as compared to peak experience. As stated earlier, this may be a result of Privette's definition of flow as being "the last time you played a sport or game".

With a more clearly specified flow definition, the differences found by Privette and Bundrick (1991) between flow, peak performance, and peak experience may not hold up. Further research is needed to better define and clarify the constructs, flow, peak performance, and peak experience, as well as their interrelationships.

Understanding Subjective Experience: The Interpretive Research Paradigm

The constructs discussed--peak performance, peak experience, and flow--are important phenomena to understand because they represent the optimal side of human experiencing. They also represent a challenge as objects of research inquiry. In order to understand subjective experiences such as these a research paradigm which can tap into human subjectivity is needed. Kuhn (1970) defined a paradigm as a way of looking at the world. He wrote that a paradigm is the scientist's spectacles, because it is through one's guiding paradigm that questions and answers are seen and understood. The interpretive paradigm, which sets out to enter into the subjectivity of the person, in order to understand how the person understands, interprets, and reacts to the world in which he or she is placed (Shapiro, 1991), is well-suited to the present research questions.

In order to understand interpretive inquiry, it is necessary to examine the paradigmatic issues surrounding it's development. Interpretive inquiry is one of several competing inquiry paradigms to logical positivism. For many years the way to conduct scientific research, logical positivism relies on quantitative and experimental methods to test hypothetical-deductive generalizations (Patton, 1990). Positivism rests on several basic assumptions which are implicitly accepted by those who conduct traditional scientific research--whether or not there is personal agreement with these assumptions. It was not until advanced graduate studies exposed the present investigator to these assumptions that a decision was made to be more skeptical of the absolutist claims of positivism, and to search for alternative research paradigms. Guba (1990) presents three basic questions that all paradigms of disciplined inquiry respond to in distinctive ways. The questions are:

1. Ontological: What is the nature of the "knowable"? Or, what is the nature of "reality"?
2. Epistemological: What is the nature of the relationship between the knower (the inquirer) and the known (or knowable)?
3. Methodological: How should the inquirer go about finding knowledge?

Positivism can be described as having a realist ontology, explained by Guba (1990) as the belief that reality exists "out there", driven by immutable natural laws. Knowledge of these entities, laws, and mechanisms is summarized in the form of time- and context-free generalizations. Once committed to a realist ontology, the positivist becomes constrained to practice an objectivist epistemology. The inquirer adopts a distant, noninteractive posture in order to observe the world operating according to natural laws. Values and other biasing and confounding factors are excluded from influencing the outcomes by an experimental/manipulative methodology that places the point of decision with nature rather than with the inquirer.

There are many forms of research paradigms that have arisen in objection to positivism. Each has its own set of terms, language, and often, an ideology directing it's approach.

Interpretive inquiry bears many similarities to several other paradigms such as constructivism, hermeneutics, and phenomenology. Specific belief systems, or assumptions, are not detailed for interpretive inquiry, but Guba (1990) does discuss the constructivist belief system. The tenets of this belief system will be presented to illustrate the divergence from positivism and the direction the paradigms above are taking.

Constructivism adopts a relativist ontology. Realities exist in the form of multiple mental constructions, dependent for their form and content on the persons who hold them. A subjectivist epistemology is used because if realities exists in the respondents' minds, subjective interaction may be the only way to access them. Findings are literally the creation of the process of interaction between inquirer and inquired. Methodologically, the constructivist proceeds in ways that seek to identify the constructions that exist and bring them into as much consensus as possible. This involves hermeneutics, where individual constructions are depicted as accurately as possible; and dialectics, where constructions are compared and contrasted dialectically.

Patton (1990) discusses hermeneutics as a specific theoretical approach to qualitative inquiry, and also as one which can help to put other qualitative theoretical orientations in perspective. Hermeneutics asks, "What are the conditions under which a human act took place or a product was produced that made it possible to interpret its meanings?" (p.84). Developed from a philosophical tradition, hermeneutics is the study of interpretive understanding, where special attention is given to context and original purpose. The process of validation within the hermeneutic tradition is relevant for clarifying the validity of interpretation in the qualitative research interview, according to Kvale (1987), who describes how the interpretation of meaning is characterized by a hermeneutical circle:

> The understanding of a text takes place through a process where the meaning of the separate parts is determined by the global meaning of the text. In principle, such a hermeneutical explication of the text is an infinite process while it ends in practice when

> a sensible meaning, a coherent understanding, free of inner contradictions, has been reached." (p.84)

One must know about the researcher as well as the researched to place any qualitative study in a proper, hermueneutic context. Hermeneutic theory argues that one can only interpret the meaning of something from some perspective, a certain standpoint, a praxis, or a situational context (Patton, 1990).

Phenomenological or interpretive inquiry aims to holistically understand human experience in context-specific settings (Patton, 1990). The basic question phenomenology addresses is: "What is the structure and essence of experience of this phenomenon for these people?" (p.69). First developed by German philosopher Husserl ([1913] 1962), phenomenology meant the study of how people describe things and experience them through their senses. His most basic philosophical assumption, says Patton, was that we can only know what we experience by attending to perceptions and meanings that awaken our conscious awareness. Interpretation is essential to an understanding of experience and the experience includes the interpretation. The focus of inquiry is on how we put together the phenomena we experience in such a way as to make sense of the world. A separate, or objective reality does not exist--there is only what one knows one's experience is and means. The subjective experience incorporates the objective thing and the person's reality (Patton, 1990).

It can be seen that a interpretive approach to the study of flow, peak performance, and peak experience, will involve paying attention to the respondents' meanings, or interpretations of their experiences, and then attempting to make sense of these interpretations through inductive and hermeneutical analysis. Since the emphasis is on interpretive processes, the term, interpretive inquiry, is used to describe the qualitative aspects of this inquiry into athletes' optimal experiences.

Patton (1990) discusses several interconnected themes that a qualitative inquiry strategy builds on. These are presented below along with discussion of how the present investigation will make use of these themes.

1. Inductive analysis: Immersion in the details and specifics of the data to discover the important categories, dimensions, and interrelationships; begin by exploring genuinely open questions rather than testing theoretically driven (deductive) hypotheses. In the present study, although an inductive approach to data analysis will take place, where appropriate, hypotheses drawn from theoretical literature will be included. Unlike some inductive research studies, the present investigation does have a knowledge base from which to draw tentative hypotheses.

2. Holistic perspective: The whole phenomenon under study is understood as a complex system that is more than the sum of its parts; focus on complex interdependencies not meaningfully reduced to a few discrete variables and linear, cause-effect relationships. The investigator concurs with the need for a holistic perspective and will attempt to maintain this outlook when analyzing the data. However, some of the data will be reductionistic, for example, athletes will be asked to rate components of each of the three constructs to be examined. Such an approach can add to knowledge by specifying important components, that can then be viewed in relation to all other components, thus creating an interchange between a holistic and a more micro-level of analysis.

3. Qualitative data: Detailed, thick description; inquiry in depth; direct quotations capturing people's personal perspectives and experiences. Qualitative data will form the main source of data, however, there will be some quantitative assessments included in some sections. This is a method of triangulating, or adding credibility, to the data.

4. Personal contact and insight: The researcher has direct contact with and gets close to the people, situation, and phenomenon under study; researcher's personal experiences and insights are an important part of the inquiry and critical to understanding this phenomenon.

The investigator will be conducting and transcribing all interviews. Information about the investigator's experiences is included in the chapter in methods, and insights are included throughout the write-up of the study.

5. Unique case orientation: Assumes each individual case is special and unique; the first level of inquiry is being true to, respecting, and capturing the details of the individual cases being studied; cross-case analysis follows from and depends on the quality of individual case studies. This procedure will be followed in analyzing the data.

6. Context sensitivity: Places findings in a social, historical, and temporal context; dubious of the possibility or meaningfulness of generalizations across time and space. Context will be clearly detailed and taken into account when analyzing and discussing the findings.

7. Empathic neutrality: Complete objectivity is impossible; pure subjectivity undermines credibility; the researcher's passion is understanding the world in all its complexity-not proving something, not advocating, not advancing personal agendas, but understanding; the researcher includes personal experience and empathic insight as part of the relevant data, while taking a neutral nonjudgemental stance toward whatever content may emerge. The investigator will strive to adopt and maintain empathic neutrality.

8. Design flexibility. Open to adapting inquiry as understanding deepens and/or situations change; avoids getting locked into rigid designs that eliminate responsiveness; pursues new paths of discovery as they emerge. The investigator will be open to modifications of the interview if participants' responses warrants re-analysis of initial design.

The foregoing discussion on the interpretive research paradigm has been included to provide background and support for the methods of investigation to be used in this study. Because the underlying purpose of this investigation is to more fully understand the flow state in athletes, the interpretive paradigm is considered the most appropriate means of attaining this research goal.

CHAPTER III

METHOD

Participants

The participants for this investigation were 28 elite-level athletes from seven sports. Elite-level participation was operationally defined as participation at an international level in one's chosen sport. That is, athletes who had represented their country in international competition met the criteria for selection as a participant in this study.

The rationale for including athletes of an elite-level as the participant sample was as follows. First, to understand the flow experience in athletes, more clarity may be obtained by interviewing athletes at a comparable standard of participation. It is possible that the flow experience is different for athletes varying widely in skill and experience level. Because this was the first investigation of its type to explore in depth the flow experience in athletes, it was considered prudent to limit examination of the flow experience to that which is likely to have some similarity in qualities. Secondly, it was expected that athletes participating at a high skill level would be more familiar with the concepts to be discussed than less-skilled athletes. According to the revised flow model (Csikszentmihalyi & Csikszentmihalyi, 1988), the flow experience begins only when challenges and skills are above a certain level and in balance. In operationalizing this concept, the personal mean for challenges and skills is used as the starting point above which experience should become positive. While this definition implies that anyone can experience flow if the conditions are appropriate, certain types of people, it can be argued, will be more likely to experience flow than others. People who often find themselves in situations demanding a high skill level, and who possess the skills required to maintain a challenge-skill balance, should experience flow more frequently than people who are not in situations demanding high skills, or

people whose challenge-skill ratio is often in a state of imbalance. Athletes competing at an elite level of participation will often be faced with challenging situations. They will also be more likely to possess the skills to be successful at this level. Further, they are most likely to have been involved in their sport for a substantial amount of time, and thus have a large reference base from which to draw upon when thinking about flow experiences, peak performances, and peak experiences. Because of these reasons it was believed that experienced elite-level athletes would have had more experience with, and more in-depth understanding of flow, peak performance, and peak experience, than athletes participating at a lower level.

There is support for choosing a particular sample from the interpretive paradigm. Both Patton (1990) and Lincoln and Guba (1985) discuss the use of purposeful sampling as an appropriate tool for qualitative inquiry. Patton discusses how the different logics that undergird qualitative and quantitative sampling approaches may be the most evident example of how these two approaches differ in intent. The logic and power of probability sampling depends on selecting a truly random sample that allows for confident generalization to a larger population. The purpose is generalization. The logic and power of purposeful sampling lies in selecting information-rich cases for study in depth. Patton explains:

> Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term *purposeful* sampling. (p.169)

The principle behind purposeful sampling is to select information-rich cases. Patton (1990) describes these as cases from which one can learn a great deal about matters of importance. They are cases worthy of study. The participants selected for the present investigation were chosen because they represent a population of athletes from which much

can be learned about the constructs of interest. In other words, they are information-rich cases.

Sample Characteristics

The 28 athletes involved in this study included 14 females and 14 males. The mean age of the participants was 26 years, with a range of 18 to 35 years. Fourteen of the athletes were Australian and 14 were from New Zealand. In terms of education, 15 had completed some college requirements and/or high school, while 13 had completed an undergraduate degree.

Athletes from seven sports were interviewed. These sports were: track and field, rowing, swimming, cycling, triathlon, rugby, and field hockey. There were four athletes from each sport represented in the sample. Seventeen of the athletes competed at an individual level, while 11 competed as part of a team. The specific events and/or positions of the athletes were as follows: Of the four track and field athletes, two were distance road runners (10k to marathon), one a middle to long distance track runner (1500m to 5k), and one a javelin thrower. Of the four rowers, two were single-scull competitors, and two were members of a crew. Across the four swimmers, all strokes and distances from sprint to middle distance events were represented. Of the four cyclists, one competed in teams pursuit, one in track sprinting, one in track and road racing, and one in road racing alone. The four triathletes competed across all event distances, from sprint to ironman. The rugby and hockey players included forwards and backs.

The reason for including different sports in the sample rather than sampling athletes from one sport is as follows. A previous investigation (Jackson, 1992) conducted with athletes of a very similar group--all national champion figure skaters--demonstrated considerable consistency in responses to questions about flow. It is an important next step to determine whether athletes from different sports experience flow in a way similar to, or different from, athletes from one particular sport. This investigation provided an

opportunity to observe whether the characteristics found with skaters appear in other sports as well. Unfortunately, there were too few participants to separate out sport- from individual-specific differences, although some tentative observations were made. As anticipated, each athlete interviewed, and each sport represented, added to the knowledge base about flow that this study hoped to achieve.

A somewhat unique characteristic of this sample population is that it included athletes from two countries, Australia and New Zealand. Through prior consulting work in Australia and New Zealand access to an elite athlete population was gained. All athletes were competing at an elite level in their respective sports, having achieved at least a top 10 placement in international competition. Seven World or Olympic medalists, including three World Champions were included in the sample. Ten Commonwealth Games medalists were also included. The Commonwealth Games is a major international competition for Australia and New Zealand; it is held every four years and includes all countries that are part of the British Commonwealth. As well as being very highly skilled, the athletes were very experienced at their sport, as shown by a mean of 12 years involvement, with a range of 4-27 years. There was a mean of seven years participation at an international level, with a range of 1 to 18 years.

Instruments

Interview Guide

An interview guide was developed for the purposes of this investigation, based on previous guides used by the investigator (Jackson, 1992; Jackson & Roberts, 1992). Research conducted by others in both the sport psychology field and the area of flow influenced the development of the interview guides.

The interview guide (see Appendix A) contained two sections. The first section asked the athletes questions about their flow experiences. The second section asked athletes to compare flow with peak performance and peak experience. The first section addressed the

first three purposes of the study, and formed the most substantial part of the interview. The fourth purpose of the study was addressed in the second section. In this section, questions were asked about peak performance and peak experience, in an attempt to understand how athletes perceived their optimal experiences and performances. The aim of this section was to better understand relationships between flow, peak performance, and peak experience in sport.

Section 1: Flow experiences. The work of Csikszentmihalyi (1975, Csikszentmihalyi & Csikszentmihalyi, 1988), Privette (1983, Privette & Bundrick, 1991) and previous research by the investigator (Jackson, 1992; Jackson & Roberts, 1992) was drawn upon when devising ways of asking athletes about flow. To assess flow as an experience independent from peak performance and peak experience, it was necessary to ask questions that did not implicate either of these two experiences in the experience being asked about. This presented quite a challenge, since the experiences probably often are interconnected in athletes' minds. The operational definition of a flow experience used in this study was: a state of consciousness involving total absorption in an activity, which is also an intrinsically rewarding experience. This definition combined the primary characteristics of flow: absorption and enjoyment. It also avoided implicating either optimal functioning (peak performance) or optimal experiencing (peak experience) in its definition. This was to allow for a more focused examination of flow, as well as an assessment of relationships with peak performance and peak experience.

To begin the interview, athletes were asked to describe an athletic experience that stood out from average, one involving total absorption and which was very rewarding in and of itself. As an additional probe, athletes were read three quotes illustrating flow, either to help them understand what was being asked for, or to react to, as a comparison to their own experience. This use of quotes is a procedure used by Csikszentmihalyi (1975, 1982,

1985) and other flow researchers (Han, 1988; Fave & Massimini, 1988) to orient respondents to flow.

After discussing their flow experience, the athletes were asked a series of questions about flow. These included:

1. What the athlete was most aware of during this experience;
2. The most distinguishing characteristics of the experience;
3. Whether the athlete had any specific goals in this situation;
4. Whether the athlete was aware of these goals during the performance;
5. Rating of challenges and skills of this situation;
6. The importance of the flow scale items to the athletes' flow experience;
7. The importance of the Experience Questionnaire items to the athletes' flow experience;
8. Any terms used by the athlete to describe flow;
9. Familiarity with, and understanding of, the term flow.

The above questions include both open-ended and closed responses. The open-ended responses were included to provide depth and richness of information, and formed the main focus of the analyses. The closed-item responses were included to provide complementary information on a quantitative level, and can be used to compare the responses of the athletes in this study to previous studies utilizing these modes of assessment.

Rating scales for assessing challenges and skills as well as flow characteristics, have been used by Csikszentmihalyi and other investigators of flow (see Csikszentmihalyi & Csikszentmihalyi, 1988) as routine ways of measuring flow. In the investigator's previous research with flow (Jackson, 1992; Jackson & Roberts, 1992) these modes of assessment were adapted for athletic populations. The scales have been progressively modified on the

basis of information gained from these studies, and will serve as a foundation for future instrument development for flow assessment in sport.

To assess challenges and skills, two ten-point scales ('1' extremely low to '10' extremely high) were used, with the athlete asked to rate first the challenges of the situation being described, then perceived skills in this situation. According to the operational definition of flow (Csikszentmihalyi, 1975), there should be a close match between challenges and skills if the person is in flow.

An 12-item flow scale, based on items used by Csikszentmihalyi (Csikszentmihalyi & Csikszentmihalyi, 1988) and the investigator (Jackson, 1992; Jackson & Roberts, 1992) was developed to assess the components of flow discussed by Csikszentmihalyi. The original scale developed by the investigator (Jackson & Roberts, 1992) was used to assess flow in 200 college athletes. A factor analysis conducted on this scale resulted in three factors, with the first factor containing the most items (6) and accounting for the most variance (22.4%). This six-item scale, with a coefficient alpha of .74 was used as the measure of flow in this first study. The study with the figure skaters (Jackson, 1992) contained the six item flow factor plus an additional five items worded to better represent the characteristics which did not load up on the first flow factor in the Jackson and Roberts study. A reliability analysis on this revised flow scale yielded a coefficient alpha of .75. The scale used in this study was the same as the flow scale used to interview the figure skaters, with two modifications. One of the questions in the scale used to assess flow in the figure skating sample did not appear to tap into the self-consciousness component of flow very well, indicated by a low mean item score and a large range of responses. After consultation with Csikszentmihalyi (1991), a new item, "I was not concerned with what others were thinking of me" was included to replace the item, "I was not self-conscious". Csikszentmihalyi also suggested the item, "I was not worried about failing or doing poorly" to assess the paradox of control dimension. This item was included but the

original control item, "I was in control" was kept in the questionnaire because it had been an important item in previous studies by the investigator. All eight components of flow and the autotelic experience discussed by Csikszentmihalyi are assessed in the flow scale.

After answering questions on a specific flow experience, athletes were asked more generally about flow. Flow was defined to them as a "a state of consciousness where you become totally absorbed in what you are doing, so much so that you may become unaware of things you normally notice. It is a state of concentration so focused that it amounts to absolute absorption in an activity, and the resulting experience is very rewarding or enjoyable." Flow was defined at this point in the interview to ensure that both investigator and respondent had the same understanding of the concept. To understand in more detail what flow experiences entail for athletes, and what factors are important for getting into flow, as well as what prevents, or disrupts flow, the following questions were asked:

1. Frequency of flow experiences in competition and training;
2. Factors perceived as important for getting into flow;
3. Perceived controllability of flow, including an assessment of which factors seen as important to getting into flow (#2) the athlete perceived were controllable/uncontrollable;
4 Factors seen as preventing flow, including an assessment of which of these factors the athlete perceived were controllable/uncontrollable;
5. Whether, once in flow, the athlete perceived he/she stays in flow for the duration of the event, or if things happen to disrupt flow;
6. How the athlete perceives he/she could return to flow if it was interrupted;
7. Rating the importance of the flow scale items to their flow experiences in general.

Section 2: Relationships between flow, peak performance, and peak experience.

Athletes were asked about a potential peak performance and peak experience, and how these events may relate to flow. To assess peak performance, an operational definition of

one's all-time best performance was used. This has been used by other researchers in sport psychology interested in understanding factors associated with athletes performing at their peak (e.g., Gould, Eklund, & Jackson, 1992; Jackson & Roberts, 1992; Orlick & Partington, 1988). After describing their best performance, athletes were asked whether they thought they were in flow during this performance. Athletes were then asked if they were familiar with the term peak performance. Peak performance was defined at this point as performing at one's optimal level. Questions about the relationship between flow and peak performance were asked to ascertain how these two events are perceived by the athletes.

To assess peak experience, athletes were asked about an experience in sport involving highest happiness and fulfillment. This is how Maslow (1968), Ravizza (1973, 1984) and Privette & Bundrick, (1991) have defined peak experience. After describing a moment of highest happiness and fulfillment in their sport, athletes were asked whether they thought this experience involved flow. Familiarity with the term peak experience was assessed. Athletes were asked whether they thought flow and peak experiences were related, and how. A final question asked athletes to comment on the relationship between all three events, flow, peak performance, and peak experience.

Summary of purpose and intent of interview guide. The interview guide was designed to elicit as much information as possible about how flow is experienced by the athletes being interviewed. Athletes were first asked to describe a flow experience, and questions which assessed the qualities of flow were asked at this point. Then, flow was directly defined, and questions about antecedents, controllability, and preventive flow factors were asked. Thus, the focus of the interview broadened from a specific flow experience to an examination of flow in more general terms, and from a descriptive to a more analytical perspective. Finally, flow was discussed in relationship to like concepts, peak performance and peak experience.

Experience Questionnaire

The Experience Questionnaire (see Appendix B; Privette, 1984) is a research instrument used to collect self reports of experiential processes associated with different human events. As used by Privette, the questionnaire consists of a variable introductory question that elicits a narrative account of an event and follows with a series of 42 descriptive statements on five-point Likert scales, ranging from 1 (no importance) to 5 (much importance). The statements were derived from experiential correlates found in analyses of literature on peak performance, peak experience, and flow. Examples of items are: "The event involved a personal value", "I was absorbed in what I was doing", and "The experience overwhelmed other senses and thoughts". In addition to these 42 items there are five additional items assessed on a five- to seven-point likert scale, making for a total of 47 questions.

Psychometric studies of the questionnaire support its use for research into experientially-defined events. It has reasonable item test-retest reliability and readability (Privette & Sherry, 1986), with an over-all test reliability of .70. Privette and Sherry argue that a test-retest coefficient of .70 for retrospective experiential phenomena indicates a fairly strong reliability. Support for construct and content validity is also provided by normative scores for the construct events: peak performance, peak experience, flow, average events, misery, and failure (Privette & Bundrick, 1987). Privette and Bundrick state that these normative scores offer a tentative base for interpreting future measurements of these or parallel events.

The questionnaire was given to athletes after they answered the flow scale, and was asked in relation to the flow experience they described. Inclusion of the questionnaire allowed for a quantitative examination of how the athletes in this study characterized their flow experience. The resulting characterization was compared to Privette and Bundrick's (1991) descriptions of flow, peak performance, and peak experience. It was expected that the description of flow found in this study would differ form Privette and Bundrick's

findings, due to the differences in the way flow is defined by the investigator and Privette. It is the investigator's belief, as well as Csikszentmihalyi's (1991) that flow has not been adequately defined by Privette, which may have resulted in incomplete characterization of flow in her work. The differences between flow, peak performance, and peak experience, discussed by Privette and Bundrick (1991) may be confounded by inaccuracy in defining flow. Due to the small sample size, this study addressed the question of relationships between flow, peak performance, and peak experience in an exploratory fashion only. It is the first time the Experience Questionnaire has been administered to an elite athlete population and it provided interesting data on how athletes' experiences of flow relate to the experiences of other populations assessed with this instrument.

Athlete's Interview Guide

An interview guide (Appendix C) was developed for the athletes to use for the questions requiring a written response.

Athlete's Demographic Questionnaire

A demographic questionnaire (Appendix D) was given to the athletes at the beginning of the interview, in order to solicit background information as well as information regarding performance level and accomplishments in their sport.

The Investigator

Interpretive research emphasizes the importance of the role of the investigator in the research process. Rather than assuming an investigator-object dualism as is the case in positivistic science, the interpretive paradigm recognizes the interactivity of inquirer and "object" of inquiry (Lincoln & Guba, 1985). The "human-as-instrument" (Guba & Lincoln, 1981) has a number of advantages making it the most appropriate tool of choice for interpretive inquiry. Guba and Lincoln present a strong argument for these advantages, highlighting the following characteristics. The human-as-instrument has greater responsiveness to personal and environmental cues; is adaptable; has a holistic emphasis;

can function at a tacit and propositional level simultaneously; can test hypotheses with respondents in the situation in which they are created; can summarize data on the spot and feed it back to a respondent for clarification, correction, and amplification; and can explore atypical or idiosyncratic responses.

As Lincoln and Guba (1985) point out, these are formidable advantages, but are not meaningful if the human instrument is not trustworthy. Experience is one way in which to gauge the investigator's trustworthiness. The investigator has been extensively involved in several qualitatively-based investigations, which have served as a training ground for becoming familiar with, and more competent at, conducting this type of research. The two research projects which have been the most significant for training, and whose methods are most applicable to the current project are: An investigation into the 1988 U.S. Olympic Wrestling Team's competitive experience in Seoul (Gould, Eklund, & Jackson, 1992); and an investigation into the experience of being a national champion, involving the U.S. National Champions in the sport of figure skating from 1986-1990 (Gould, Jackson, & Finch, 1992).

In addition, the investigator has taken coursework in alternative paradigms to positivism: interpretive inquiry, narratives of the self, and social constructionism. Through these experiences, and through personal reading, the investigator has become a firm believer in the appropriateness of paradigms such as these when the topic of interest is human experience. There are differences in emphasis and in ideological intent between the paradigms, but each of these alternatives to positivism refutes positivism's position on the nature of reality, the nature of the relationship between investigator and respondent, and on how one should go about finding knowledge (Guba, 1990). Most relevant to a discussion of the role of the investigator is the alternative paradigms' refutation of the dualist/objectivist notion of the relationship between investigator and respondent. Positivists contend that it is both possible and essential for the investigator to adopt a

distant, noninteractive posture (Guba, 1990). Values and other biasing and confounding factors are thereby automatically excluded from influencing the outcomes. In contrast, in the alternative paradigms listed above, a subjectivist position is upheld, where values are recognized as mediating inquiry. In fact, subjectivity is the only way to knowledge according to the constructivist paradigm, because it is the only way to unlocking the constructions held by individuals (Guba, 1990).

In recognizing the subjectivist nature of the relationship between investigator and respondent, the present investigator believes it is important to reveal certain characteristics of the "human instrument" since these have no doubt influenced the questions being asked in this study, and as discussed earlier, such information is important for gauging trustworthiness at the investigator level. The exposure to and experience with qualitative approaches to research has influenced the investigator's beliefs about the value of such endeavors. Competency has also been developed in managing qualitative data. The specific topic of inquiry in this investigation is one of personal interest to the investigator. Understanding flow and optimal experience has been a major goal of the investigator since first reading Csikszentmihalyi's (1975) Beyond Boredom and Anxiety. Application to athletes is a natural consequence of the investigator's own involvement as an athlete and as a student of sport science. Interaction with elite-level athletes from several sports through consulting and research in sport psychology has aided understanding of the elite athlete while at the same time prompting curiosity about the relationship between psychological states and performance. Thus, this project is the culmination of several years of thinking about, talking about, observing, and also experiencing the focus of inquiry: flow.

Procedures

Phase 1: Development of Instruments

The interview guide was developed on the basis of previous work in the area by the investigator (Jackson, 1992; Jackson & Roberts, 1992), and by following procedures used

by Csikszentmihalyi (1975, Csikszentmihalyi & Csikszentmihalyi, 1988) for assessing flow, as well as those used by Privette (Privette & Bundrick, 1991) for assessing peak performance, peak experience, and flow. The development of the interview guide involved two interacting goals: (1) Determining the most appropriate ways of asking athletes about flow; and (2) Determining the most important questions to ask about flow in order to increase understanding of this experience. The present interview guide was closely based on the one most recently used to ask national champion figure skaters about flow (Jackson, 1992). Feedback about the clarity of the questions was obtained from these athletes, and the instrument underwent some minor modifications on the basis of feedback received and further reflection by the investigator about how to best approach the investigation of flow. This interview guide was then pilot-tested on four elite-level athletes for clarity, and minor modifications were made on the basis of feedback received.

Phase 2: Selection of Participants

The participants were selected from elite athlete populations in Australia and New Zealand. The investigator had access to elite athlete populations in these two countries through prior and concurrent consulting work with athletes in several different sports. Available athletes were contacted about their willingness to be interviewed about their optimal sport experiences. Due to the fact that participants came from two different countries, and prior research into optimal experiences by the investigator has been carried out in a third country, awareness of cross-cultural differences was upheld during data analysis. Understanding how athletes from different cultures interpret and define their optimal experiences is a necessary task in developing a more complete understanding of such experiences. Apart from some minor differences in terms used by the athletes, no other obvious cultural differences were observed. Due to the small number of athletes in this study, and the fact that different sports were included, making any conclusions about cultural differences can only be done at a very tentative level, if at all. It is noteworthy that

an interpretive paradigm does allow for individual and cultural differences to come through the data, since it is the individual's expressed meanings that form the raw data themes. Differences between individuals may be more likely to appear in qualitatively-based analyses than quantitative because the latter uses the group as the level of analysis, which can often mean that individual differences are lost as unexplained variance.

Phase 3: Data Collection

All interviews were conducted during the months of November 1991 to January 1992, while the investigator was in Australia and New Zealand. A microcassette recorder was used to record the interviews in entirety. Interviews were conducted face-to-face, and lasted between one to two hours.

Phase 4: Transcribing the Interviews

All interviews were transcribed verbatim in preparation for data analysis. A Sony recorder-transcriber (Model BM-820) was used to transcribe the interviews.

Phase 5: Data Analysis

The first task for the qualitative researcher is to become thoroughly familiar with the data. Because the investigator transcribed all of the interviews, she became very familiar with both the verbal inflections and the written transcriptions of the athletes' responses. After the transcripts were completed, each interview was read carefully, and salient themes were noted on the transcripts. These themes were later complied into a set of raw data themes (quotes or paraphrased quotes) for each of the main questions of the interview. After reading each interview, an idiographic profile of each athlete was written, summarizing the main themes and noting any unique responses given during the interview.

To record the raw data themes, and to facilitate the inductive analysis process, 3 by 5 index cards were used. One theme was used per card. Athletes' quotations were used to depict the raw data themes, which form the first level of analysis of the data. This method ensured that the analyses were based directly on what the athletes said, allowing their

meaning to come through the process of analysis. The entire quotation was written on one side of an index card, and a summary statement written on the other side of the card. An external checker read all cards to ensure that summary statements accurately reflected athletes' quotations. Once the list of raw data themes was compiled, an inductive analysis of the data was undertaken in order to generate higher-order themes that linked similar raw data themes together into a higher-order concept. A subsequent further inductive analysis was done to link the higher-order themes into themes of even greater generality. These latter themes were labeled general dimensions, and represented a further level of abstraction that enabled a larger number of athletes' ideas to be drawn together.

The process of data analysis just described is what Lincoln & Guba (1985) call a synthetic analysis, where the data which is constructed through investigator-respondent interactions are reconstructed into meaningful wholes. Instead of reducing the data, the process is actually one of induction.

In addition to the inductive qualitative analyses, deductive qualitative analyses were used to answer some of the questions of the investigation. For example, to test the fit of Csikszentmihalyi's (Csikszentmihalyi & Csikszentmihalyi, 1988) model of flow, after the raw data themes were complied, they were put into one of Csikszentmihalyi's dimensions if there was a match between the ideas expressed. In addition, deductive quantitative analyses were used to analyze the rating scales data, as well as the Experience Questionnaire.

The two forms of data, the qualitative and quantitative, answered different aspects of the inquiry, and complemented each other. Using qualitative and quantitative methods is a form of method-triangulation that contributes to verification and validation of findings (Patton, 1990). Triangulation of qualitative and quantitative data is a form of comparative analysis that can strengthen the reliability of the data. However, it should be recognized that "comparative research often involves different operational measures of the 'same

concept'", a situation which nonetheless "does not defeat comparison, but can strengthen its reliability" (Fielding & Fielding, 1986, p.13).

Specific details of how the data was analyzed is addressed below in the descriptions of how each of the four purposes of the study were examined.

Purpose 1 data analysis. The first purpose of the investigation was to understand how flow is experienced by athletes. To answer this question, athletes' descriptions of their flow experience were analyzed. This experience was described to the athletes as a time that stood out as being better than average in some way, an experience where they were totally absorbed in what they were doing, and which was very rewarding in and of itself. Each descriptor of this experience was coded as a raw data theme. The resulting themes were compared with Csikszentmihalyi's (1990) eight components of flow, and his end result of an autotelic experience, to see whether the themes expressed by the athletes paralleled Csikszentmihalyi's construction of flow. That is, each raw data theme was deductively analyzed for fit with one of Csikszentmihalyi's dimensions. Each grouping of raw data themes was then inductively analyzed into higher-order themes, within the appropriate dimension. Any themes that did not seem to fit one of Csikszentmihalyi's dimensions were grouped together as a miscellaneous category. In addition, the themes most frequently mentioned by the athletes were highlighted, and compared to the mean item ratings given to the flow scale, to try to establish the most salient features of flow for this group of athletes. This comparison was also a means of assessing the face validity of the flow scale.

A secondary purpose of investigating athletes' flow experiences was to assess whether Csikszentmihalyi's (1975; Csikszentmihalyi & Csikszentmihalyi, 1988) operational flow definition of a challenge-skill match is an accurate description of how athletes experience flow. Challenges and skills of athletes' flow experiences were compared for degree of congruency and level of challenge and skill perceived.

Purpose 2 data analysis. The second purpose of this investigation was to examine factors athletes perceive as both antecedent to, and preventive of, flow occurring. Athletes were first asked to identify all the factors they considered important to getting into flow. Then they were asked to identify all the factors they considered prevented flow. Finally, they were asked to identify all the factors they considered disrupted flow once they were in such a state. The athletes responses were inductively analyzed from the raw data theme level up to the dimension level for each of these questions. In addition, percentages of athletes having a theme within each dimension, and percentages of raw data themes represented by each dimension, were calculated and tabulated.

Purpose 3 data analysis. The third purpose of this investigation was to examine factors related to flow that athletes perceived themselves having control over. Athletes were directly asked this question about controllability of flow, as well as being asked to specify whether the factors they listed in response to Purpose 2 questions were perceived as controllable or uncontrollable. The number of athletes who thought flow was controllable was noted, as was the number of athletes who did not believe flow can be controlled. The number of controllable or uncontrollable flow factors for Purpose 2 questions were also noted, and are listed as either controllable or uncontrollable in the relevant Table (see Tables 17, 19, & 21).

Purpose 4 data analysis. The fourth purpose of the investigation was to attempt to clarify the relationship between the constructs, flow, peak performance, and peak experience. This question was addressed both qualitatively and quantitatively. At a qualitative level, athletes' responses to the questions about the relationship between flow, peak performance, and peak experience were summarized into general statements, and quotations were used to illustrate the perspectives the athletes had about this issue. Quantitatively, the number of athletes recognizing the constructs as independent were compared to the number of athletes perceiving interrelationships between flow and peak

performance, or flow and peak experience. In addition, quantitative analyses were used to assess the independence and commonality of the constructs. Privette and Bundrick (1991) found eight factors from a factor analysis of the 47 items in the Questionnaire (see Table 1). Athletes' data was presented according to this eight factor structure, to determine the consistency between the scores on the items of the Questionnaire between Privette's sample and the athletes in this study. Both the qualitatively-derived themes and the scores on the Questionnaire factors and items were compared with the unique and common factors of flow, peak performance, and peak experience proposed by Privette and Bundrick (1991).

Methods of Establishing Trustworthiness

Due to the relative recent rise in the use and acceptability of qualitative data, the issue of trustworthiness or credibility of the data is one frequently posed by critics of qualitative approaches, and is one which proponents of the qualitative approach need to take into consideration in design of studies and analysis of data. Lincoln and Guba (1985) define the basic issue in relation to trustworthiness as one in which the inquirer has to persuade his or her audiences (including self) that the findings of the inquiry are worth paying attention to, worth taking account of. They use the terms "credibility", "transferability", "dependability", and "confirmability" as naturalistic equivalents for the conventional terms, "internal validity", "external validity", "reliability", and "objectivity". Credibility seems close to the positivist notion of internal validity, although Lincoln and Guba stress that the people from whom the data were created should agree that the findings are credible. Transferability is viewed as an empirical matter, that is, it is the responsibility of future research to confirm or disconfirm the transferability of the findings. Working hypotheses are forwarded, and their transferability depends on the similarity between sending and receiving contexts. The task of the researcher is to provide enough information about the context and conditions under which the study was conducted (the sending context) to allow the reader to make an informed decision about whether the information presented is relevant

to his or her situation (the receiving context). Dependability, matching with the positivist notion of reliability, differs from reliability in that because contexts and people are always changing, it is not considered possible to replicate any one study exactly. An examination of dependability involves examining the process of the inquiry. Such issues as appropriateness of inquiry decisions and methodological shifts, and an assessment of how the inquiry was conducted are addressed in judging the dependability of an investigation. Fourthly, confirmability, akin to the positivist notion of objectivity, involves an examination of the product of inquiry. Confirmability of a study is determined by "the extent to which data and interpretations are grounded in events rather than the inquirer's personal constructions." (Lincoln & Guba, 1985, p.324). The goal is to demonstrate that the findings and interpretations are internally coherent or logically derived from the data.

The present investigation follows in the path of nonpositivistic approaches to inquiry, however, it does not contain all the elements of a naturalistic inquiry, as described by Lincoln and Guba (1985). The methods of establishing trustworthiness put forward by Lincoln and Guba are discussed and several strategies proposed by these authors are followed because they have spelled out more clearly than most researchers of qualitative methods particular ways in which the quality, or trustworthiness of an investigation can be judged.

Patton (1990) has also detailed ways to enhance the quality and trustworthiness of a qualitative investigation and he discusses three distinct but related elements of qualitative inquiry that the trustworthiness issue depends on: (1) the use of rigorous techniques and methods for gathering high-quality data that is carefully analyzed, with attention to issues of validity, reliability, and triangulation; (2) the credibility of the researcher, which is dependent on training, experience, track record, status, and presentation of self; and

(3) philosophical belief in the phenomenological paradigm, that is, a fundamental appreciation of naturalistic inquiry, qualitative methods, inductive analysis, and holistic thinking.

Each of these three elements of qualitative inquiry that the trustworthiness issue depends on, and the procedures used in this investigation to enhance the trustworthiness of the data are discussed below.

1. Techniques for Enhancing the Quality of the Research Process

First, techniques for establishing trustworthiness by paying attention to issues of credibility, transferability, dependability, and confirmability, as used in this investigation, are discussed.

(a) Thick description. Patton (1990) states that the qualitative researcher has an obligation to be methodical in reporting sufficient details of data collection and the process of analysis to permit others to judge the quality of the resulting product. The investigator tried to ensure that sufficient detail was provided about the process of data collection and analysis of data throughout the write-up. Transferability is the main criterion area addressed through thick description.

(b)Reflexive journal. A technique discussed by Lincoln and Guba (1985) that is applicable to establishing credibility, transferability, dependability, and confirmability, is that of keeping a reflexive journal. This is a kind of diary in which the investigator, on a regular basis, records information about self (hence the term "reflexive") and method. In relation to self, the journal can be thought of as providing the same kind of data about the human instrument that is often provided about paper-and-pencil instruments used in conventional studies. In relation to method, the journal provides information about methodological decisions made and the reasons for making them. Lincoln and Guba (1985) suggest the journal consist of three parts: (1) a daily schedule and logistics of the study; (2) a personal diary that provides opportunity for catharsis, for reflection about what

is happening in terms of one's own values and interests, and for speculation about growing insights; and (3) a methodological log in which methodological decisions and accompanying rationales are recorded. The investigator kept a journal throughout the research process in accordance with these guidelines. The journal served to help the investigator's thought processes as decisions were made during the data collection, analysis, and write-up stages. Relevant information about the investigator and methodological decisions made were taken from the journal and included in the write-up of the study.

(c) Rival explanations and negative case analysis. Other techniques for enhancing the credibility of the study include testing rival explanations and negative case analysis. Once the patterns, linkages, and plausible explanations through the inductive analysis have been described, rival or competing themes or explanations should be examined. Patton (1990) describes how this can be done both inductively and logically. Inductively it involves looking for other ways of organizing the data that might lead to different findings. Logically it means thinking about other logical possibilities and then seeing if those possibilities can be supported by the data. In this way, the best fit between data and analysis can be determined. This procedure was relevant when analyzing the Purpose 4 findings on the relationships between flow, peak performance, and peak experience. Privette and Bundrick (1991) have provided a rival explanation for the relationships to that which was found in this investigation. The fit of their explanation to the study's data was examined, and discussion of the relevancy of their model to the relationships found in this study is included.

Negative case analysis is closely related to the testing of alternative constructs. It involves a search for negative cases, for example, responses that do not fit the conclusions formed on the basis of the main patterns found. There are no specific guidelines for how to deal with negative cases, other than it is important to look for them and openly deal with

them. Lincoln and Guba (1985) discuss how one can continuously revise a hypothesis until it accounts for all known cases without exception. By following this procedure, all "outliers" can be eliminated by continually revising the hypothesis until the "fit" is perfect. Kidder (1981) who is a proponent of such a method of dealing with negative cases, suggests that negative case analysis is to qualitative research what statistical analysis is to quantitative:

> Both are means to handle error variance. Qualitative research uses "errors" to revise the hypothesis; quantitative analysis uses error variance to test the hypothesis, demonstrating how large treatment effects are compared to the error variance. (p.244)

While there is merit to the idea of negative case analysis, the need to reduce the number of exceptional cases to zero seems to be rather extreme, and could result in loss of interesting and potentially important information. Therefore, the investigator took a slightly different stance to this issue. Negative cases were looked for, but they were included as part of the results, rather than trying to revise a hypothesis or conclusion until all cases fit the idea. For example, not all of the raw data themes describing the flow experience could be fit into one of Csikszentmihalyi's dimensions of flow. A separate dimension was created to handle these themes, and their inclusion is seen as adding further information about how flow is experienced by athletes.

(d) Triangulation. Triangulation is an often-mentioned method of enhancing the credibility of the data. There are several different approaches to triangulation that can be made. One method that was employed in this study is methods triangulation (Patton, 1990). This involves checking out the consistency of findings generated by different data collection methods. Most often, it involves comparing data collected through qualitative methods with some kind of quantitative methods. The questionnaire used in this investigation provided quantitative data that was compared to the inductively analyzed qualitative data. As Patton points out, this type of procedure is seldom a straightforward

process because it is likely that qualitative and quantitative methods will answer different questions that do not easily come together to provide a single, well-integrated picture of the situation. The investigator did not expect that results from the two methods would completely converge to produce a nicely integrated whole. However, a high degree of congruency was found which strengthened the credibility of the findings. Throughout the reporting of the results, qualitative and quantitative findings are presented together, as relevant to answering the questions of this investigation.

(e) Design checks. Another technique for enhancing the credibility of the data is what Patton (1990) calls design checks. The basic idea here is that it is important to keep methods and data in context. Patton discusses how the investigator needs to return to the reasons for having made initial design decisions when considering how sampling strategies may have affected findings. One issue that the investigator had to deal with in the data collection and analysis stages was how many subjects to include. The investigator had access to many more athletes than at first anticipated, and was pleasantly surprised at the eagerness of most of the athletes to take part in the interview. A decision was made to try to interview athletes from a range of sports, so that any sport-specific findings could come through the data. Also, since all the potential subjects were highly skilled, preference was given to those who had attained a very elite status in their sport, which fit with the purpose of the study, to examine flow in elite performers. The investigator was aware that the sample chosen for this study may possess some unique qualities that limits the generalizability of conclusions. Care was taken when making conclusions to limit them to persons, contexts, and purposes for which the data are applicable (Patton, 1990).

(f) Peer debriefer. The peer debriefer is another method of addressing the credibility issue. According to Lincoln and Guba (1985) peer debriefing is "a process of exposing oneself to a disinterested peer in a manner paralleling an analytic session and for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within

the inquirer's mind." (p.308) The basic role of the peer debriefer, as understood by the investigator, is to provide an external check on the inquiry process. This involved clarifying interpretations and decisions made by the investigator, exploring any biases of the investigator, and generally acting in the role of "devil's advocate". A "disinterested peer" is someone knowledgeable about the methodological issues and topical area of the study but who is otherwise not involved in the study. Mr. Doug Newburg, a doctoral candidate in sport psychology at the University of Virginia, served as the investigator's peer debriefer. Mr. Newburg is an experienced qualitative researcher, co-founder and editor of a new qualitative sport psychology journal, and has acted as peer debriefer in several studies prior to this one.

There were seven debriefing sessions held, and they took place from when the interviews were transcribed right up until the final draft of the dissertation was completed. The peer debriefer read the investigator's proposal, all the transcripts, and drafts of results and the discussion. The peer debriefer questioned the methodological decisions and methods of analyzing and writing up of the data. The investigator found the peer debriefing sessions to be helpful and very challenging. It became evident that the peer debriefer took a stronger position on qualitative philosophy and implications for doing qualitative research than the investigator. The investigator found this difference in philosophy a stimulant to her own thinking, and the peer debriefing sessions resulted in considerable self-questioning, and thinking about future approaches to research.

Some of the issues discussed in the peer debriefing sessions included:

- deciding the final number of subjects to be included in the study;
- my position regarding Csikszentmihalyi's model of flow;
- my own definition and understanding of the flow state;
- what does the word "control" mean in relationship to flow;
- how to approach the write-up and presentation of results;

- how much of myself to include in the write-up of the results;
- articulating how what I found can be of benefit to others, particularly those who have no understanding of the concept of flow;
- coming to terms with differences in philosophy about how to do a qualitative research study; and
- challenging me to go beyond Csikszentmihalyi's presentation of flow, and to convey the knowledge gained about flow from this study in new ways and with new terminology.

Notes from all the peer debriefing sessions were kept in the investigator's reflexive journal. A statement by the peer debriefer regarding his role can be found in Appendix E.

(g) Audit check. The final step taken to build the trustworthiness of the study was to have an audit check conducted. The audit check is the primary means of establishing the dependability and confirmability of a study, according to Lincoln and Guba (1985). These authors (1985) discuss the role of the auditor as being akin to that of a fiscal auditor. A person not otherwise associated with the study examines both the process and product of the inquiry and makes a statement about the acceptability of the inquiry and it's interpretations. It is recommended that the auditor be an approximate peer, be knowledgeable about the subject matter of the study, and of methodological issues relevant to the study. Dr. Jay Kimiecik served as auditor for this study. Dr. Kimiecik is an assistant professor in sport and exercise psychology at Miami University at Oxford, Ohio, and a former graduate colleague of the investigator. He has conducted research into flow with athletes and exercisers, and is familiar with qualitative methods of studying flow. The audit check process followed the guidelines suggested by Lincoln and Guba. A formal letter of agreement was sent and signed by the auditor, and copies of the research proposal, samples of the transcripts, the reflexive journal, and a final draft of the dissertation were sent for examination to the auditor. A written report, or letter of attestation, which summarizes the findings of the audit check can be found in Appendix F.

2. The Credibility of the Researcher

Because the researcher is the instrument in qualitative inquiry, a qualitative study should include information about the researcher (Patton, 1990). This recommendation has already been addressed in the Instruments section; it is brought up again here to reinforce the idea that investigator credibility is an important way to help establish trustworthiness of the findings of the study. Patton recommends that any personal or professional information that may have affected data collection, analysis, and interpretation--either positively or negatively--should be reported. The reflexive journal was the primary method for ensuring this information was recorded and dealt with in the write up of the study results as appropriate.

3. Paradigm Orientation and Credibility

This third issue related to credibility involves the researchers' philosophical beliefs about the rationale for and worthwhileness of the paradigm of choice he or she will be operating from. Patton (1990) discusses the need to be aware that "both scientists and nonscientists often hold strong opinions about what constitutes credible evidence" (p.477). Patton goes on to state that qualitative researchers need to be prepared to explain and defend the value and appropriateness of qualitative approaches. This is due to the concerns other scientists most likely trained in and working from the positivistic paradigm will have in relation to several issues about qualitative approaches.

One concern is the attractiveness of numbers. Patton states that "numbers convey a sense of precision and accuracy even if the measurements that yielded the numbers are relatively unreliable, invalid, and meaningless" (p.479). Patton argues that the issue is not one of being pro or anti numbers but of being "promeaningfulness". Qualitative methods can answer some questions better than quantitative--and vice versa. Further, qualitative methods do not produce "softer data" than quantitative--they produce *different* data. The

use of both qualitative and quantitative methods in this study is done from this perspective of wishing to generate as much meaning as possible about the questions of interest.

The subjectivity-objectivity debate is perhaps the most common issue in a paradigm debate. Positivistic science places great emphasis on objectivity. Subjectivity is eschewed for fear of allowing bias, unreliability and irrationality into an investigation. To maintain objectivity, distance from the setting and the people being studied, formal operationalism and quantitative measurement, manipulation of isolated variables, and experimental designs, are the paths to follow. Yet these methods do not protect against bias, they merely disguise it, according to Patton (1990). "Distance does not guarantee objectivity; it merely guarantees distance" (p.480). Guba (1981) has recommended replacing the traditional mandate to be objective with a mandate to be balanced, fair, and conscientious in taking account of multiple perspectives, multiple interests, and multiple realities. He argues that the stance of the investigative journalist is a good role model for researchers to follow. Instead of assuming a single tangible reality, the investigative journalist assumes multiple realities or truths. Fairness replaces objectivity as the important criterion. A test of fairness is whether both sides of a case are presented, and there may be multiple sides. The present investigator will strive to take on this role of investigative journalist when collecting and analyzing data.

Closely related to the issue of objectivity is that of truth. The idea of a single tangible reality is an assumption of logical positivism. The idea that what is true depends on one's perspective, and is, therefore, inherently definitional, situational, and internal, is associated with phenomenology (Patton, 1990). Patton continues: "Qualitative data will tend to make the most sense to people who are comfortable with the idea of generating multiple perspectives rather than absolute truth" (p.483). The present investigator upholds the multiple realities perspective and was searching to understand these when interviewing participants.

To conclude this section, the limitations of the present investigation are addressed. This topic is dealt with more fully in the last chapter, however, some initial comments are made here. The data consisted of primarily retrospective reports, which opens it to questions of accuracy and selective recall. However, when seen from a phenomenological paradigm, questions of "truthfulness" of the data have to be considered in light of the idea of multiple and constructed realities which are primarily internal. The focus of this investigation was on understanding the *experiences* of athletes. Moreover, the experiences addressed were among the most positive the athlete has been likely to encounter in his or her sport participation. Recall of these experiences was therefore expected to be good, and this was confirmed in the interviews. Outcomes were de-emphasized in this investigation, thus avoiding the confounding effect of outcomes when assessment of athletes' psychological states involves retrospective introspection as Brewer et al. (1991) discuss. Even though it is recognized that retrospective reports involve some drawbacks, the Brewer et al. conclusions are not applicable to the population being sampled in the present investigation. Brewer et al. conducted laboratory experiments with psychology majors, and replicated only one of the two experiments with intercollegiate athletes. Subjects were given closed response choices to describe their performance. From these closed responses, Brewer et al. concluded that outcome was found to bias recall of psychological states experienced during pursuit rotor performance, one of the more meaningless motor learning tasks ever devised. They went on to extrapolate that athletes may report having experienced psychological states they typically associate with successful performance after an outstanding performance, regardless of whether or not they actually experienced those states. Apart from making an extremely suspect generalization from pursuit rotor performance in a laboratory to outstanding performances by athletes in real life, Brewer et al. only gave their subjects a limited number of response choices from which to describe their performance. The athletes in this study were asked to describe their flow state

experiences in their own terms, and the resulting descriptions were assembled from athletes' statements in response to open-ended questions about these experiences. The context, population, and methods of the Brewer et al. study were far removed from those of the present study. And, as Ashcraft (1989) explained, and the classic study by Bloom (1985) clearly demonstrated, meaningful experiences are remembered and can be recalled with clarity by respondents.

The characteristics of the sample imposed some limits on the generalizability of the findings. However, generalizability is considered an inappropriate convention by which to judge qualitative research (Lincoln & Guba, 1985; Patton, 1990). There is even debate amongst quantitative researchers over the issue of generalizability. Cronbach (1975), one of the major figures in educational measurement and evaluation, has concluded that social phenomena are too variable and context-bound to permit very significant empirical generalizations. Cronbach has also addressed the issue of generalization in the natural sciences as well as in the behavioral and social sciences, and concludes:

> Generalizations decay. At one time a conclusion describes the existing situation well, at a later time it accounts for rather little variance, and ultimately it is valid only as history. (p.122)

Cronbach's (1975) alternative is to give proper weight to local conditions, and to view any generalization as a working hypothesis, not a conclusion. Lincoln and Guba (1985) also proposes that generalizations be seen as working hypotheses, to be tested again in the next encounter and again in the next encounter after that. As previously discussed, these authors state that whether a working hypothesis holds in some other context, or even in the same context at some other time, is an empirical issue. The task of the researcher is to provide "thick description" so that a potential applier can make transferability judgments. That is, the responsibility of the researcher is to provide the data base for others to make application from. Patton (1990) offers the term, extrapolation, as an alternative goal for the

researcher: "Extrapolations are modest speculations on the likely applicability of findings to other situations under similar, but not identical, conditions." (p.489). To extrapolate implies that one has gone beyond the narrow confines of the data to think about other applications of the findings. Research should produce information that is useful and informs action. The results of this study were extrapolated in the hope that the information gained from this study will help those interested in making the sport experiences of athletes more productive and enjoyable .

CHAPTER IV

RESULTS

This study had four purposes. They were: (1) to examine how flow is experienced by elite athletes; (2) to examine possible antecedent and preventive flow factors; (3) to examine which of these antecedent and preventive factors athletes perceive themselves having control over; and (4) to investigate the relationships between flow, peak performance, and peak experience. The results are presented in accordance with each of these purposes. A combination of qualitative and quantitative analyses, as described in the method chapter, were conducted. There were 760 pages of single spaced text comprising the transcripts, from which the majority of the data was taken. Inductive and deductive content analyses were conducted for Purposes 1 and 2, involving categorization of specific themes into more general dimensions. These specific themes, labeled raw data themes, are direct or paraphrased quotations taken from the transcripts. Higher order themes are assembled from grouping together like raw data themes into more general categories. Finally, general dimensions group together like higher order themes. For clarity, in both text and tables, dimensions are identified in bold face type and higher-order themes are underlined.

Purpose 1 Results

Dimensions Of Flow As Experienced By Elite Athletes

The first purpose of this study was to examine how flow was experienced by elite athletes. A major analysis, involving 295 independent raw data themes extracted from the transcripts, was conducted to ascertain the relevancy and fit of Csikszentmihalyi's (Csikszentmihalyi & Csikszentmihalyi, 1988) eight flow dimensions, and the end result of an autotelic experience, to the flow experiences of the athletes in this study. Altogether, there were 336 athlete responses to the questions asking them to describe a flow state

experience. Responses which expressed exactly the same idea were counted as one raw data theme, resulting in the total of 295 raw data themes used in this analysis. After the raw data themes were extracted, they were deductively analyzed into Csikszentmihalyi's dimensions, and/or a separate dimension where they did not fit into one of Csikszentmihalyi's dimension definitions. Each dimension was defined from Csikszentmihalyi's descriptions. Higher order themes were inductively derived from grouping like raw data themes (within the dimension they had been deductively analyzed into) into more general categories. Thus, this analysis involved a combination of deductive and inductive analyses.

An external checker independently classified the 336 raw data themes into the higher order themes, and the 55 higher order themes into the general dimensions. There was 99% agreement at the raw data level, and 100% agreement at the higher order theme level. The four raw data themes classified differently to the investigator were discussed, and the external checker agreed they could go in either the higher order theme he had put them into, or that chosen by the investigator. The external checker commented that several of the raw data themes and higher order themes were seen by him as fitting more than one higher level grouping, and that knowing exactly where they would best fit was dependent on knowing the context of the statements. The external checker agreed with the investigator's decision to leave the four raw data themes where they had been originally classified, after the context of these themes had been explained.

Another factor that at times made the classifications a difficult process was that there was considerable overlap between the dimensions. This was to be expected since the dimensions are all describing one process. In particular, the dimensions, **Action-Awareness Merging** and **Concentration on the Task at Hand** involve overlapping ideas. Csikszentmihalyi (1991) described these two dimensions as corollaries of one

another. Therefore, it is possible that themes within these two dimensions could also fit under their corollary dimension.

Table 2 presents a summary table, identifying each of the 10 dimensions resulting from this analysis. The table lists the percentage of athletes who cited a theme in each dimension, plus the number of raw data themes in each dimension, and percentage of all raw data themes that each dimension represented.

The results of the deductive-inductive analysis are presented in Tables 3 to 12, each of which cover one of the 10 dimensions of the flow experience, and include the higher order and raw data themes which were matched with the particular dimension. Table 12 covers those themes unable to be matched with one of Csikszentmihalyi's dimensions. It is apparent from observing Tables 3 to 12 that the majority of the 336 raw data themes could be matched with one of Csikszentmihalyi's components of flow. In fact, 97.3% of the themes were categorized in this way. Each of the dimensions, along with their respective themes, are described below.

Dimension 1: **Challenge-skill balance**. According to Csikszentmihalyi (1990), this flow dimension describes the balance perceived between the challenges of a situation and one's capabilities to meet that challenge. Thirteen raw data themes fit under this dimension, making it account for 4.4% of all the themes. Thirty-six percent of the athletes mentioned a theme which was categorized into this dimension. Table 3 lists the raw data themes together with the higher order themes into which they were inductively analyzed. The higher order themes illustrate the perception that one is coping well with the demands of the task, as in doing skills really well, able to maintain speed, able to change pace easily, and challenging but able to meet challenge.

Table 2

Dimensions Of Flow, Percentage Of Athletes Citing Themes Within Each Dimension, And Percentage Of All Raw Data Themes Represented By Each Dimension

% Athletes Citing	Dimensions Of Flow	N of Raw Data Themes	% Of All Raw Data Themes
36	Challenge-Skill Balance	13	4.4
86	Action-Awareness Merging	57	19.3
39	Clear Goals	12	4.1
54	Unambiguous Feedback	20	6.8
82	Concentration On Task At Hand	38	12.9
82	Paradox Of Control	47	15.9
32	Loss Of Self-Consciousness	14	4.8
29	Transformation Of Time	11	3.7
96	Autotelic/Enjoyable Experience	74	25.1
29	Miscellaneous	09	3.1

Table 3

Dimension 1: Challenge-Skill Balance

Definition: A match between perceived challenges and skills, with both being at a high level.

1.1. Doing Skills Really Well
1.1.1. doing skills really well
1.2. Able To Maintain Speed
1.2.1. going fast, but not an effort
1.2.2. fast
1.2.3. ability to feel pure speed
1.2.4. optimal pace
1.2.5. able to hold onto good pace
1.2.6. just started at speed had to go and maintained it
1.2.7. easy speed
1.3. Able To Change Pace Easily
1.3.1. able to pick up pace easily
1.3.2. such a quick change of pace
1.3.3. crew able to accelerate and change gear
1.4. Challenging But Able To Meet Challenge
1.4.1. was challenging but also seemed automatic
1.4.2. the extreme challenge-but not approached as a major hurdle

Note. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are raw data themes.

Dimension 2: **Action-awareness merging**. This dimension describes how one becomes so involved in what one is doing when in flow that the activity becomes spontaneous, almost automatic (Csikszentmihalyi, 1990). This dimension captured the second highest number of themes, 57, making it account for 19.3% of all the themes. Eighty-six percent of the athletes mentioned a theme which was categorized into this dimension, which was the second highest percentage of athlete responses. Table 4 lists these themes and the higher order themes into which they were inductively analyzed. As can be seen in Table 4 the flow experience for the athletes involved total absorption, as

reflected in the higher order themes, nothing else enters awareness, and totally absorbed in what doing. Further, this absorption led to some very positive experiential aspects while performing, reflected in the higher order themes, things happening automatically, everything flows, floating sensation, and felt easy.

Table 4

Dimension 2: Action-Awareness Merging

Definition: Involvement so deep that becomes spontaneous or automatic. There is no awareness of self as separate from actions one is performing.

2.1. Things Happening Automatically
- 2.1.1. just seems to be happening
- 2.1.2. things happening automatically
- 2.1.3. felt I was remote controlled in a way
- 2.1.4. reactions quicker-things just seem to happen
- 2.1.5. doing everything right without having to think too much about it
- 2.1.6. automatic
- 2.1.7. auto-focus
- 2.1.8. everything totally out of my mind
- 2.1.9. almost on auto
- 2.1.10. relying totally on feeling senses of body

2.2. Nothing Else Enters Awareness
- 2.2.1. like shutting everything else out
- 2.2.2. that was all that mattered in the whole existence
- 2.2.3. nothing else matters (2)
- 2.2.4. mind doesn't wander (2)
- 2.2.5. not thinking of anything
- 2.2.6. don't see or hear anyone
- 2.2.7. don't tend to hear anything-except very loud yelling
- 2.2.8. don't hear crowd
- 2.2.9. don't hear anything during intense moments in game
- 2.2.10. don't feel presence of people around you

2.3. Totally Absorbed In What Doing
- 2.3.1. in the groove (2)
- 2.3.2. everything feels very smooth and fluent
- 2.3.3. feel like performing in a different state
- 2.3.4. total involvement
- 2.3.5. totally absorbed in my stroke
- 2.3.6. so absorbed in what I'm doing
- 2.3.7. totally absorbed (2)

2.3.8. in the bubble
2.3.9. very involved in game

2.4. Everything Flows
2.4.1. everything just flows
2.4.2. you just flow
2.4.3. flowing with it
2.4.4. flowing
2.4.5. things flowing really well
2.4.6. everything flowing and falling into place

2.5. Floating Sensation
2.5.1. floating (3)
2.5.2. being light-a little like floating
2.5.3. like being in a state of suspension
2.5.4. javelin floating, going a long way
2.5.5. I just sort of floated
2.5.6. floating so high
2.5.7. almost feel like you're floating
2.5.8. like floating across the ground

2.6. Felt Easy
2.6.1. easy (2)
2.6.2. feel really comfortable (2)
2.6.3. really easy (3)
2.6.4. really efficient
2.6.5. ease of performance
2.6.6. easy-even though went so well
2.6.7. lot less effort
2.6.8. not using as much effort
2.6.9. feeling quite comfortable
2.6.10. cruised-easy
2.6.11. felt like was cruising
2.6.12. felt like it took no effort
2.6.13. it was easy, and fast
2.6.14. no effort

Notes.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.
2. Numbers in parentheses reflect number of athletes citing theme, when greater than 1.

Dimension 3: Clear goals. This dimension describes how goals are clearly set in advance, so that one knows exactly what to do (Csikszentmihalyi, 1990). Goals can also be developed out of involvement in the activity, where non-contradictory demands are

perceived. This dimension included 12 themes, making it account for 4.1% of all themes. Thirty-nine percent of the athletes mentioned a theme which was categorized into this dimension. The raw data themes are listed, along with the higher order themes into which they were inductively analyzed, in Table 5.

Table 5

Dimension 3: Clear Goals

Definition: Goals clearly defined, so person has a strong sense of what going to do.

3.1. Knowing Exactly What Going To Do
3.1.1. knew exactly how was going to swim race
3.1.2. I knew what I was going to do
3.1.3. I knew what I had to do
3.1.4. really knowing what you were going to do
3.1.5. knew I was going to be able to do it
3.2. Know As Or Before Begin That Going To Be Great/Successful
3.2.1. knew as began that going to have great performance
3.2.2. knew at a certain point that was going to take off and that there would be no stopping me
3.2.3. know that what going to do going to be successful-foresight and clarity
3.2.4. I knew exactly what was going to happen-and that is what did happen
3.2.5. knew was going to feel good in upcoming segment
3.2.6. you see yourself doing exactly what you plan to do
3.2.7. was confident of doing a quick time

Note.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.

Dimension 4: Unambiguous feedback. This dimension describes how clear and immediate feedback, not requiring analysis or reflection, allows for continuous involvement and action (Csikszentmihalyi, 1990). The feedback provides information that one is succeeding in one's goal. Twenty themes could be categorized into this dimension, making it account for 6.8% of all themes. Fifty-four percent of the athletes mentioned a theme which was categorized into this dimension. The raw data themes, together with the

higher order themes into which they were inductively analyzed, are presented in Table 6. As can be seen in Table 6, popular expressions for describing this dimension by athletes include the terms listed as higher order themes, going like clockwork, everything in harmony, everything goes perfectly, and everything clicks.

Table 6

Dimension 4: Unambiguous Feedback

Definition: Immediate and clear feedback that one is succeeding in one's goal.

4.1. Knowing That Going Well
4.1.1. knew performing well
4.1.2. receiving feedback from movements that at right pace
4.1.3. knew that doing things well
4.1.4. knowing everything was exactly right
4.1.5. everything seems really clear
4.2. Goes Like Clockwork
4.2.1. goes like clockwork (2)
4.2.2. feel like you are a machine
4.3. Everything In Harmony
4.3.1. everything in harmony
4.3.2. team harmony
4.4. Everything Goes Perfectly
4.4.1. everything going perfectly (2)
4.4.2. everything going right (2)
4.4.3. everything coming together (2)
4.4.4. at optimal pace (2)
4.4.5. everything going really well (3)
4.4.6. doing things I didn't know I could do
4.5. Everything Clicks
4.5.1. feel like it clicks
4.5.2. everything clicks
4.6. Everything Clicks With Teammates
4.6.1. everything clicks with teammates
4.6.2. don't cut self off from teammates-but do from everyone else
4.6.3. feel part of team

Notes.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.
2. Numbers in parentheses reflect number of athletes citing theme, when greater than 1.

Dimension 5: Concentration on task at hand. This dimension describes the complete focusing of attention on the task at hand that occurs when one is in flow (Csikszentmihalyi, 1990). Thirty-eight themes were categorized into this dimension, making it account for 12.9% of all themes. Eighty-two percent of the athletes mentioned a theme which was categorized into this dimension. The raw data themes, together with the higher order themes into which they were inductively analyzed, are listed in Table 7. As can be seen in Table 7, the idea of total task focus was clearly represented in the higher order themes, complete task focus, total concentration, maintain concentration throughout performance, and not concerned with where others are. At first glance, the other themes may not seem to fit so easily into this dimension. However, they were included because they indicate a task focus for the athletes who had themes under aware of where competitors are, very aware of the big picture, and can hear people but they are of no influence. That is, for some athletes, such themes represent ideas about the requirements of their sport tasks. For example, in a track race, it is part of the task to be aware of where the other competitors are, particularly at certain parts of the race. In field sports, such as rugby and hockey, it is very important to be able to take in the big picture. And in some sporting situations, the crowd may be so loud that it is difficult to block them out totally, however, they can become irrelevant to one's task focus.

Table 7

Dimension 5: Concentration On Task At Hand

Definition: Total concentration on task at hand.

5.1. Complete Task Focus
- 5.1.1. focus on doing own job (2)
- 5.1.2. only focus on own performance (2)
- 5.1.3. really concentrating on what doing (3)
- 5.1.4. feel really focused
- 5.1.5. concentration on task
- 5.1.6. focus only on task

5.1.7. just think about my rhythm
5.1.8. focus on movement trying to create
5.1.9. completely focused on own boat
5.1.10. just focus on ball
5.1.11. concentrating on ball
5.1.12. very much in my own boat
5.1.13. concentrating on technique
5.1.14. focusing on plan

5.2. Total Concentration
5.2.1. total concentration
5.2.2. switched on, being focused
5.2.3. concentrated
5.2.4. total intensity and concentration

5.3. Maintain Concentration Throughout Performance
5.3.1. maintained concentration over long period of time
5.3.2. concentration not broken for entire game

5.4. Not Concerned With Where Others Are
5.4.1. aware that passing everyone, but not focusing on this
5.4.2. not thinking about where others were
5.4.3. only aware of self

5.5. Aware Of Where Competitors Are
5.5.1. aware of where other competitors are
5.5.2. monitoring position in race
5.5.3. aware of what opponent doing

5.6. Very Aware Of The Big Picture
5.6.1. really aware of the whole, of what everyone in race doing
5.6.2. very aware of what's going on around you
5.6.3. extraordinary awareness of everything that's going on
5.6.4. able to take things in
5.6.5. taking in everything-rather than focusing on the laps
5.6.6. switch between internal-external focus

5.7. Can Hear People But They Are Of No Influence
5.7.1. can hear people but they are of no influence
5.7.2. could hear crowd, but was partially blocked out
5.7.3. conscious of crowd but most aware of sounds of own movements
5.7.4. aware of crowd noise but focused only on selves
5.7.5. aware of crowd, but only of hearing a noise
5.7.6. heard crowd but not when actively involved in play

Notes.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.
2. Numbers in parentheses reflect number of athletes citing theme, when greater than 1.

Dimension 6: **Paradox of control**. This dimension is labeled the *paradox* of control by Csikszentmihalyi (1990) to indicate that it is not being in control per se, but the possibility of control that is enjoyable to people in flow. Another way of looking at it might be that one feels in control without having to think about trying to be in control. The resulting perceptions are ones of power, confidence, and calm. Forty-seven themes were categorized into this dimension, making it the third most popular dimension, accounting for 15.9% of all themes. Moreover, 82% of the athletes mentioned a theme which was categorized into this dimension. Most of the themes illustrate the positive perceptions that the athletes experienced through this sense of control. Thus, themes included in this dimension include positive thoughts, totally confident, feel unbeatable, feel like can do anything-no fear, feel like nothing can go wrong, total composure, and totally relaxed. Some athletes also directly expressed the idea of sense of control, with their themes being categorized under the higher order theme, feel in control. Table 8 lists all themes.

Table 8

Dimension 6: Paradox Of Control

Definition: Sense of exercising control, without actively trying to be in control.

6.1. Feel In Control
- 6.1.1. feeling of total control
- 6.1.2. you're totally under control
- 6.1.3. in total control of body
- 6.1.4. feel really in control
- 6.1.5. knew I had it all under total control
- 6.1.6. in control
- 6.1.7. felt in control
- 6.1.8. controlled power
- 6.1.9. total and absolute control

6.2. Positive Thoughts
- 6.2.1. waves of positive thoughts coming into head
- 6.2.2. positive thoughts
- 6.2.3. positive self-talk

6.3. Totally Confident
- 6.3.1. totally confident
- 6.3.2. very confident
- 6.3.3. confidence really high
- 6.3.4. had more confidence than I ever had
- 6.3.5. so confident could change gears back down
- 6.3.6. confidence on a roll
- 6.3.7. so much confidence

6.4. Feel Unbeatable
- 6.4.1. feel like can't be beaten at anything
- 6.4.2. feel like I'm unbeatable
- 6.4.3. knew they couldn't catch me
- 6.4.4. no way that going to be beaten or make a mistake
- 6.4.5. felt like was never going to miss a medal

6.5. Feeling Like Can Do Anything-No Fear
- 6.5.1. feel like can do anything
- 6.5.2. ready to tackle anything-no fear
- 6.5.3. not letting fears in
- 6.5.4. not phased by big name competitors
- 6.5.5. knew I was ready

6.6. Feel Like Nothing Can Go Wrong
- 6.6.1. nothing can go wrong
- 6.6.2. you can't imagine anything going wrong

6.7. Total Composure
- 6.7.1. total composure
- 6.7.2. nothing worries you
- 6.7.3. no panic
- 6.7.4. although enormous pressure, no feeling of concern
- 6.7.5. no worries, really confident

6.8. Totally Relaxed
- 6.8.1. totally relaxed (2)
- 6.8.2. really relaxed (4)
- 6.8.3. pretty relaxed
- 6.8.4. relaxing through concentrating
- 6.8.5. was able to relax under pressure
- 6.8.6. not struggling to get anything going
- 6.8.7. relax and think about smooth movements
- 6.8.8. relaxed
- 6.8.9. feeling of absolute calm
- 6.8.10. although nervous beforehand, also calm, ready to go
- 6.8.11. a calm, collected approach

Notes.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.
2. Numbers in parentheses reflect number of athletes citing theme, when greater than 1.

Dimension 7: Loss Of Self-Consciousness. This dimension expresses the idea that concern for the self disappears as one becomes so absorbed that there is a feeling of oneness, or unity with the environment (Csikszentmihalyi, 1990). Fourteen themes, representing 4.8% of all themes, were categorized into this dimension. Thirty-two percent of the athletes mentioned a theme which was categorized into this dimension. The raw data themes, shown with their higher order themes in Table 9, illustrate this loss of self-consciousness in athletes by the titles, so tuned into activity that feel as one with it, not as concerned with how well doing, and doing things instinctively.

Table 9

Dimension 7: Loss Of Self-Consciousness

Definition: Concern for the self disappears as one becomes at one with the activity.

7.1. So Tuned Into Activity That Feel As One With It
7.1.1. like boat becomes part of you
7.1.2. feel as though body and bike one
7.1.3. felt one with everything
7.1.4. everyone on team in tune, on same wavelength
7.1.5. completely in touch with teammates, boat, and water
7.1.6. really tuned into what doing
7.1.7. so in tune at sensory level that can let eyes picture on things outside
7.1.8. tuned into water
7.2. Not As Concerned With How Well Doing
7.2.1. not as concerned with how well doing
7.3. Doing Things Instinctively
7.3.1. subconscious expression or release-conscious mind not interfering
7.3.2. doing things instinctively and confidently
7.3.3. very involved, but at an instinctive level
7.3.4. mind and body working toward same venture
7.3.5. get lost in what doing

Note.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.

Dimension 8: **Transformation of time**. This dimension describes the alteration, or sense of distortion of time that can occur during flow (Csikszentmihalyi, 1990). Eleven themes, representing 3.7% of all themes, were categorized into this dimension. Twenty-nine percent of the athletes mentioned a theme which was categorized into this dimension. As can be seen in Table 10, some athletes experienced times speeding up, represented by the time speeds up higher order theme; others experienced time slowing down, represented by the higher order themes, time to think and time slows down; while still others just had a sense of time disorientation, represented by the higher order theme of that name.

Table 9

Dimension 8: Transformation Of Time

Definition: Sense of time alteration or time disorientation.

8.1. Time To Think
- 8.1.1. time to do things
- 8.1.2. have time to think about what happening
- 8.1.3. time to think

8.2. Time Speeds Up
- 8.2.1. over so fast
- 8.2.2. time passes quickly
- 8.2.3. time goes by really quickly

8.3. Time Disorientation
- 8.3.1. it felt quick, real quick, but everything felt slow at the same time
- 8.3.2. although time went by very quickly, remember being aware of specific things I did in that time

8.4. Time Slows Down
- 8.4.1. time slows down
- 8.4.2. everything is almost slow motion
- 8.4.3. things in slow motion

Note.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.

End Result: **Autotelic Experience**. Csikszentmihalyi (1990) describes the end result of all these descriptive dimensions of flow being an autotelic, or enjoyable experience. The doing the activity is its own reward. Csikszentmihalyi gives considerable weight to this idea of flow being an enjoyable experience, as indicated in his 1990 book, where he refers to the eight dimensions of flow as "the elements of enjoyment". In fact, Csikszentmihalyi often substitutes the word enjoyment for flow in his writings. Seventy-four themes were categorized into this end result dimension, making it the dimension capturing the most themes, 25.1% in all. Ninety-six percent of the athletes, all but one, mentioned a theme which was categorized into this dimension. Table 11 lists the raw data and higher order themes making up this dimension. As well as expressing the ideas of enjoyment directly, as in the higher order themes, enjoying experience as it occurs, enjoy the effort, leaves you on a high, leaves you feeling great, and extremely rewarding, themes representing enjoyment for elite athletes were included. Thus, for some athletes, enjoyment is equivalent to experiences such as movements feel great, no pain, feel strong, endless supply of energy, peaceful, or perfect/highest level performance.

Table 11

End Result: Autotelic/Enjoyable Experience

Definition: Experience so enjoyable, the doing is its own reward

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9.1. Enjoying Experience As It Occurs
- 9.1.1. really enjoy experience (3)
- 9.1.2. feel great the whole way
- 9.1.3. you enjoy it
- 9.1.4. really enjoyable
- 9.1.5. very aware of, and enjoying experience
- 9.1.6. like a fun game of overtaking competitors
- 9.1.7. good fun
- 9.1.8. magical
- 9.1.9. felt like such a rush
- 9.1.10. it was fantastic

9.2. Movements Feel Great
- 9.2.1. body fees great (3)
- 9.2.2. feel really great (2)
- 9.2.3. feeling good
- 9.2.4. feel like a champion, a true athlete
- 9.2.5. exhilaration of movements-a buzz
- 9.2.6. feeling so good in race
- 9.2.7. feel fantastic
- 9.2.8. bike feels good

9.3. No Pain
- 9.3.1. no pain (5)
- 9.3.2. pain not crippling, able to take anything

9.4. Feel Strong
- 9.4.1. feel very strong (3)
- 9.4.2. feeling so strong
- 9.4.3. strength and power-concentrated to the one end

9.5. Endless Supply Of Energy
- 9.5.1. endless supply of energy
- 9.5.2. when came off, felt as though hadn't played a game
- 9.5.3. going at maximum, but feel like could keep going indefinitely
- 9.5.4. don't feel fatigue
- 9.5.5. the more I extended, the better I was going, and the more I wanted to extend
- 9.5.6. can keep going harder without sense of body wearing down
- 9.5.7. having heaps of energy
- 9.5.8. feel better and better as time goes on
- 9.5.9. have so much energy
- 9.5.10. knew had plenty left to give
- 9.5.11. not fatigued by game

9.6. Peaceful
- 9.6.1. very peaceful (2)
- 9.6.2. like a trance
- 9.6.3. like a meditation

9.7. Enjoy The Effort
- 9.7.1. aware of effort, felt good
- 9.7.2. even though feel like dying, you are still moving, everything is smooth
- 9.7.3. effort and pain enjoyable/secondary to the way you are going
- 9.7.4. feel fatigue but know it is all coming together so ignore fatigue feelings
- 9.7.5. results so satisfying that enjoy the effort

9.8. Perfect/Highest Level Performance
- 9.8.1. perfect race
- 9.8.2. performed to plan

9.8.3. went perfectly to plan
9.8.4. played a perfect game
9.8.5. performed to highest level

9.9. Leaves You On A High
9.9.1. a real buzz (3)
9.9.2. leaves you on a high (4)
9.9.3. remained in altered state for an hour after game over
9.9.4. on top of world-on a high for a long time
9.9.5. excited, on a high
9.9.6. created lasting euphoric buzz
9.9.7. adrenalin rush

9.10. Leaves You Feeling Great
9.10.1. feel terrific, and excited about future
9.10.2. pretty happy
9.10.3. is exhilarating
9.10.4. love the feeling, want to capture it again
9.10.5. feels so good to have it go so perfectly
9.10.6. really happy, proud with how performing
9.10.7. feel really elated afterwards
9.10.8. happy after
9.10.9. takes all your troubles away
9.10.10. feel terrific after
9.10.11. feel good about self-gives you more confidence in everything you do

9.11. Extremely Rewarding
9.11.1. gives you the buzz to keep doing what you're doing
9.11.2. most satisfying feeling athletically had in a long time
9.11.3. really rewarding
9.11.4. what you get out of it far exceeds what you put in
9.11.5. knowing it can happen keeps you going through the e bad times
9.11.6. very memorable
9.11.7. the most rewarding
9.11.8. state of perfectness

Notes.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.
2. Numbers in parentheses reflect number of athletes citing theme, when greater than 1.

Miscellaneous Dimension. There were some themes that did not seem to fit into any of the dimensions proposed by Csikszentmihalyi, and so were placed into this miscellaneous dimension. Nine themes, representing 3.1% of all themes, were categorized into the higher order themes, aware of the effort, remember hearing the crowd, and feel out of body, as if watching self. Twenty-nine percent of the athletes mentioned a theme which was categorized into this dimension. Thus, at least for some athletes, there are experiences somewhat antithetical to Csikszentmihalyi's conception of the flow state. These themes are listed in Table 12.

Table 12

Miscellaneous Dimension

Definition: Themes not falling into one of Csikszentmihalyi's dimensions of flow.

10.1. Aware Of The Effort
10.1.1. you do feel the effort
10.1.2. able to push myself the whole time
10.1.3. full out effort, resulting in some visual distortion
10.2. Remember Hearing The Crowd
10.2.1. remember hearing crowd
10.2.2. remember roar of crowd
10.2.3. heard crowd
10.2.4. heard crowd and coach
10.3. Feel Out Of Body, As If Watching Self
10.3.1. see self as being out of own body, looking at self
10.3.2. felt separate from what doing, almost as if sitting on top of right shoulder, looking at self going great

Note.
1. Themes underlined and numbered 1.1 to 1.4 are higher order themes. Remaining themes are first order themes.

Familiarity and Understanding Of Flow By Elite Athletes

After the athletes had described their flow state experience, from which the preceding descriptors were drawn, they were asked whether they had any terms or expressions to describe this state. There were a variety of responses to this question, and they are listed in Table 13.

An inspection of Table 13 shows that the terminology used by the athletes to describe what it is like when in flow includes both words similar to or the same as Csikszentmihalyi, and new ways of describing the experience. Expressions such as "in the bubble", "in the groove", "on auto", "tuned in", "everything clicks", "easy speed", "switched on", "tough and not puff", add images of it all coming together and of everything fitting together for an athlete in flow. The positive feelings associated with the state are illustrated by terms some athletes chose for the experience, such as "unbelievable", "orgasmic", "peaceful", and "super alive". Eight of the athletes interviewed had no terms come to mind, indicating that it may be difficult to express in words the experience of flow, at least for some athletes. It is interesting that two athletes chose the word "flow" or "flowing". Up to this point in the interview, the word flow had not been brought up by the interviewer. When asked, approximately half of the athletes had heard of the term flow (n =15), while just less than half had not (n = 13).

Table 13

Expressions Used By The Athletes To Describe The Flow State

in the bubble	going really well
complete satisfaction	nothing else matters
focused	weightlessness
orgasmic	in the groove
total involvement	optimal pace
peaceful	flowing
on auto	tuned in
everything clicks	easy speed
switched on	in control
tough and not puff	strong
concentration	total composure and confidence
going fast and doing it easily	floating
ideal	super alive
unbeatable	natural subconscious expression/release
flow	total and absolute control

Correspondence Between Flow Scale Items Most Strongly Endorsed And Dimensions Of Flow Analysis Results

After their open-ended descriptions about their flow state experience, athletes were asked to rate the 12 item flow scale for the importance of each item to their experience. Mean scores for each item are shown in Table 14; the scale ranges from 0-10.

Table 14

Mean Scores For Flow Scale Items

ITEM	MEAN	S.D.	RANGE
1. Attention focused entirely on what doing	9.7	0.6	8-10
2. Knew clearly what supposed to do	9.5	0.7	8-10
3. Mind and body in perfect unison	9.5	0.7	8-10
4. Not an effort to keep mind on what happening	9.5	0.8	7-10
5. Got direct clues/feedback as to how well was doing	9.3	0.9	7-10
6. Had a deep but effortless involvement	9.1	1.2	5-10
7. Was in control	9.5	0.7	8-10
8. Was not concerned with what others were thinking of me	9.4	1.1	5-10
9. Time seemed to alter	7.1	3.9	0-10
10. Was not worried about failing or doing poorly	8.6	1.8	3-10
11. Really enjoyed the experience	9.8	0.4	9-10
12. Was at cutting edge between ability and skills was performing	9.4	0.7	8-10

The item with the highest mean rating was, "I really enjoyed the experience" ($\underline{M}$ = 9.8). This corresponds to the dimension, **Autotelic/Enjoyable Experience**, which contained the greatest number of themes from the 336 athlete descriptors of their flow experience. The item with the second highest mean rating was, "My attention was focused entirely on what I was doing" ($\underline{M}$ = 9.7), which corresponds to the dimension, **Concentration On Task At Hand.** As can be seen from Table 14, almost all of the items were given very high ratings. The one exception was item 9, "Time seemed to alter", which had a mean of 7.1. A range of 0-10 for this item indicated that the relevancy of sense of time alteration was dependent on the particular athlete. A reliability analysis run on the flow scale indicated that this time alteration item, with a low item-total correlation, significantly lowered the coefficient alpha. When deleted from the scale, the alpha rose from .48 to .69, the latter being an acceptable alpha for such a small sample size.

To obtain a better understanding of the aspects of flow that were the most salient to this group of athletes, the higher order themes from the Dimensions of Flow Analysis which contained the greatest number of athlete responses were calculated. These themes were: Felt Easy ($\underline{n}$ = 18), Complete Task Focus ($\underline{n}$ = 18), Totally Relaxed ($\underline{n}$ = 15), Enjoying Experience as it Occurs ($\underline{n}$ = 12), Totally Absorbed in What Doing ($\underline{n}$ = 11), Endless Supply of Energy ($\underline{n}$ = 11), Leaves You Feeling Great ($\underline{n}$ =11), Things Happening Automatically ($\underline{n}$ = 10), and Nothing Else Enters Awareness ($\underline{n}$ = 10). The dimensions capturing the greatest percentage of athlete responses about their flow experience were: **Autotelic/Enjoyable Experience, Action-Awareness Merging, Concentration On Task At Hand,** and **Paradox Of Control.** The above nine themes fell into one of these four dimensions, indicating that these may be the most significant flow dimensions for athletes. Most of the items on the flow scale assessing one of these dimensions received a mean rating of 9.5, indicating support through triangulation of the data to the importance of these dimensions. Two of the items assessing aspects of these dimensions

did not receive quite the same endorsement. One of these was the item, "I had a deep but effortless involvement", which received a mean rating of 9.1. Several of the athletes commented about this item, assessing the dimension, **Action-Awareness Merging**, saying their involvement was deep, but not necessarily effortless, which makes intuitive sense given the high levels of physical exertion needed in the sporting context. The other item to receive a slightly lower rating was, "I was not worried about failing or doing poorly", which received a mean rating of 8.6. This item assessed the **Paradox Of Control Dimension.** Some athletes commented that fear of failure or doing poorly was perceived as a motivating force before competition, and therefore they may have disagreed with this item, resulting in it receiving a slightly lower mean rating.

While the identification of the most frequently cited and rated flow dimensions in important, it was the detail and complexity of themes found to be important to the athletes' flow experiences that stood out most about these analyses. Moreover, it should not be forgotten that flow is a process, and it is the experiencing of several characteristics together which makes the flow experience so special. The number of dimensions that each athlete had a theme within was calculated in order to determine how important it was for several of the dimensions to be occurring together during an athlete's flow experience. All athletes mentioned themes which fit into three or more of Csikszentmihalyi's nine dimensions of flow (eight dimensions & end product of autotelic experience). Further, twenty-six, or 93% of the athletes mentioned themes which fit into five or more of these nine dimensions. To illustrate the process of flow, themes depicting this idea are included below:

> Where I've been happiest with my performance, and I've felt sort of one with the water, and my stroke, and everything. . . I was really tuned into what I was doing. I knew exactly how I was going to swim the race, and I just knew I had it all under control, and I got in and ah, I was really aware of what the whole, of what everyone in the race was doing. . . and I was just totally absorbed in my stroke, and I knew I was passing them all but I didn't care, I mean it's not that I didn't care, I was going, "Oh, this is cool!" And just swam and won, and I was totally in control of the situation. It was really cool.

> You're working with the bike. It doesn't feel like you're sitting on the bike, you feel like altogether it's just one piece of machinery working together. . like you're part of this machine that you were born with and it's how you move.

> I feel as if I'm very involved in the event, but my involvement is almost without a huge input on my part. It's almost as if I'm floating from one place to another and having involvement purely through instinct more than anything.

> Just felt terrific the whole way, I felt really in control, and didn't feel the pain that I would normally feel in that run. . . and just really enjoyed the experience of running and really had a--probably the most successful race ever of my life . . . It wasn't as painful as the others. I ran a personal best. I felt very, um, in control. I felt very strong. I was able to run as I had planned . . . I felt really focused. I just felt like, you know, like athletes say "it clicked". . . it felt great the whole way.

One athlete who used the word, flow, in her description, expressed well the feeling that led Csikszentmihalyi to give the experience the title of flow:

> Well, you don't feel pain. You don't feel like you're going too hard, or too softly, you just flow. Just flowing, you can't feel yourself breathe, it's not a laboring. It's really efficient, you feel like you're being really efficient. And you feel like you are a motor, you are a machine. But you're controlling your machine.

This athlete continued with the motor analogy to describe the idea of efficiency, and ease of performance that accompanies flow:

> It's like being in a state of suspension-you judge the correct pace for your fitness level, sort of psychic. It's like you've turned the car off and its just going down the hill, you're not using any engine. You don't feel like you're using up your fuel.

The above quotations illustrate the understanding of what the process of flow is like to the athletes interviewed, and how special this state is to them. Clearly, the quotations express the type of state defined and described by Csikszentmihalyi. They also add to Csikszentmihalyi's definition by the use of new words and analogies to describe the experience, and by describing a complete process. This latter has tended to be lost as

Csikszentmihalyi and colleagues (e.g., Csikszentmihalyi & Csikszentmihalyi, 1988) have turned more towards quantitative approaches of assessing flow.

Challenges and Skills Ratings for Athletes' Flow Experience

In addition to examining whether athletes' flow experience descriptions paralleled Csikszentmihalyi's components of flow, it was also a purpose of this investigation to assess whether the challenge-skill match put forward by Csikszentmihalyi as the operational definition of flow was relevant to the athletes' flow experience. Challenges and skills were assessed on a 10 point scale, following the methods of Csikszentmihalyi. The mean challenge rating was 9.2 (S.D. = 0.82), and the mean skill rating was 8.8 (S.D. = 0.97). Thus, there was a close match between challenges and skills for the athletes, with challenges having a slightly higher mean rating than skills. A t-test revealed no significant difference between mean challenge and skill scores ($t = 1.94$, $df = 27$, $p > .05$).

Frequency of Flow Experiences

Athletes were asked how often they experienced flow, both in competition and in training. Two seven-point likert scales, ranging from 1 "Never" to 7 "Always" were used to assess this question. The mean frequency rating for competition was 4.18 (S.D. = 1.16), where 4 on the scale represented "Several Times A Year". The mean frequency rating for training was 4.68 (S.D. = 1.22). A t-test revealed no significant difference between mean competition and training frequency scores ($t = -1.82$, $df = 27$, $p > .05$).

Sub-Group Comparisons on Descriptive Flow Data

Because athletes from seven different sports were interviewed, and since there was some range of "eliteness" between the 28 participants, sub-group comparisons were made on the descriptive flow data. Due to the small numbers in the groups, it is recognized that these comparisons are of an exploratory nature only.

When the seven sport groups were compared across the descriptive data, very few differences were found. There were no significant differences on the mean total flow scale

score, and across each of the flow scale items, only one difference emerged. This was for the item, "Time seemed to alter", where there was a significant F (F (6, 27) = 2.69, $p < .05$). However, no significant differences were found between any two group means, using Tukey's HSD procedure. This lack of any significant post-hoc comparisons is probably due to the small n. The group with the highest mean score on this item was the field hockey group (M = 9.5), while the group with the lowest mean item score was swimming (M = 2.0). Although this is only a speculative interpretation, there may be a sport-type relationship associated with the relevancy of the time alteration flow dimension. Swimming racing relies on keeping precise time splits, and so the swimmer may be very aware of real time. A field sport, such as hockey, however, which extends over a long period of time, and where the performance is most often not time-dependent, may allow its participants to lose sense of real time more easily than sports which are more directly time-influenced.

The seven sports were compared on their frequency of flow scores, and no significant differences were found. The 28 athletes were divided into two groups, based on whether they were an individual or a team sport athlete. Seventeen were individual athletes, and eleven were team sport participants. There were no differences between the two groups on the frequency with which they experienced flow in competition. However, there was a significant difference on the frequency with which they experienced flow in training, t (26) = 2.61, $p = .01$. The individual sport athletes had a higher mean frequency of flow in training score (M = 5.1) than the team sport athletes (M = 4.0). This probably has something to do with the continuity of activity differences that occur when training individually versus training as part of a team. Team training is often of a more stop-start nature than individual sport training, and so may not allow for as many flow state experiences as can potentially occur when training on one's own.

To assess whether there were any differences in flow state on the quantitative measures between athletes who had attained different levels of achievement, the groups were divided into athletes who had medalled in international competition ($n = 17$) versus those who had not ($n = 11$). There was no difference between these two groups on their mean flow scale score, nor on the frequency with which they experienced flow.

To summarize these sub-group comparison findings, what stands out most about the results is the lack of any major differences between athletes from different sports, or between athletes with slightly different levels of attainment within their sport. The lack of differences lends support to the robustness of flow theory, although the numbers in this study were too small to make any strong conclusions.

Purpose 2 Results

The second purpose of this study was to move beyond description of the flow state in elite athletes to analyzing factors that are associated with such athletes getting into, not getting into, or being taken out of, flow. Three questions were asked:

1. What helps you to get into a flow state?
2. What prevents you getting into a flow state?
3. What, if anything, disrupts you once you are in flow?

These three questions were each analyzed via inductive content analyses. Raw data themes, each representing an independent idea or thought conveyed by an athlete, were inductively analyzed into higher order themes, and from higher order themes into general dimensions. The results of each inductive analysis are presented below. First, in order to gain a sense of the data as a whole, Table 15 presents the general dimensions for all three analyses. The dimensions have been ordered across the rows so that a dimension representing a similar idea from across the three analyses is put on the same row. For example, the dimension, **Optimal Physical Preparation and Readiness** in the Help Flow Column is set next to **Non-Optimal Physical Preparation And Readiness** in

the Prevent Flow Column, and **Problems With Physical Preparation And Readiness** in the Disrupt Flow Column.

Table 15

General Dimensions For Factors Helping, Preventing, And Disrupting Flow

HELP FLOW	PREVENT FLOW	DISRUPT FLOW
• Motivation to Perform	• Lacking Motivation to Perform	
• Achieving Optimal Arousal Level Before Compete	• Non-Optimal Arousal Level	
• Pre-Competitive & Competitive Plans & Preparation	• Problems with Precompetitive Preparation	
• Optimal Physical Preparation & Readiness	• Nonoptimal Physical Preparation & Readiness	• Problems with Physical Readiness or Physical State
• Optimal Environmental & Situational Conditions	• Non-Optimal Environmental & Situational Conditions	• Non-Optimal Environmental & Situational Influences
• Performance Feeling Good	• Performance Going Poorly	• Performance Errors/Problems
• Focus	• Inappropriate Focus	• Inappropriate Focus
• Confidence & Positive Attitude	• Lacking Confidence & Negative Attitude	• Doubting or Putting Pressure on Self
• Positive Team Play & Interaction	• Negative Team Play & Interaction	• Problems with Team Performance or Interactions
• Experience Factor		

Factors Facilitating Flow

Ten dimensions were formed to represent the factors that help an athlete to get into flow. These dimensions, the percentage of athletes citing a theme within each dimension, and the percentage of all raw data themes that each dimension represents, are shown in Table 16. There were 131 independent raw data themes extracted from the 28 interviews to

answer the question as to what factors help an athlete to get into flow. An external checker independently classified the raw data themes into the 33 higher order themes, and the higher order themes into the general dimensions. There was 97% agreement at the raw data theme level, and 100% agreement at the higher order theme level. The four raw data themes classified differently to the investigator were discussed, two were moved, one was re-worded, and the checker agreed with keeping the original placement of the fourth theme.

Table 16

Factors Helping Flow General Dimensions, Percentage Of Athletes Citing Themes Within Each Dimension, And Percentage Of All Raw Data Themes Represented By Each Dimension

% Athletes Citing	Factors Helping Flow General Dimension	% Of All Raw Data Themes
64	Pre-Competitive & Competitive Plans/ Preparation	18.8
64	Confidence & Positive Attitude	11.6
57	Optimal Physical Preparation & Readiness	13.0
57	Achieving Optimal Arousal Level Before Compete	13.0
54	Motivation To Perform	12.3
50	Performance Feeling Good	8.7
39	Optimal Environmental & Situational Conditions	7.2
39	Focus	5.1
25	Positive Team Play & Interaction	8.7
7	Experience Factor	1.4

Each dimension will be discussed below in relation to the themes from which it was comprised. Dimensions will be discussed in order of percentage of athletes each represented, as presented in Table 16. Following these descriptions is a Table (Table 17) listing all dimensions, higher order, and raw data themes.

Pre-competitive and competitive plans and preparation. This dimension had the equal largest percentage of athletes citing a theme within it (64%), and included the highest percentage of all raw data themes (18.8%). Six higher order themes made up this dimension: being by self before compete, follow pre-competitive routine, pre-competitive mental preparation, race plan, knowing clearly what to do, and being totally prepared. Clearly, being prepared for the event, and following the precompetitive routines that helped one to be mentally ready, were important components to setting the stage for flow to occur. For five athletes, it was crucial to have some time alone before they competed, and even if this wasn't available physically, turning inward was: "Even if I'm not in a room by myself, it's just like thought collection. I might be standing in the middle of the bunch waiting for the start gun to go off, but I must turn in." Following specific routines, often including mental preparation, was important, so that the athlete felt ready and had a clear idea of what he or she was going to do in the event. Having a specific race plan was also important for some athletes in some events. For example, a runner spoke of how his race plan freed him from worry about his competitors: "With my race plans now, I've thought about every possible thing that can happen. . . so there's no ifs or buts or whats. You're still a bit worried about what other people are doing if you don't have a plan." Knowing everything was in place allowed the athlete to focus on the task and to switch into a more automatic mode of functioning that seems to be part of the flow process. This idea was expressed by a javelin thrower: "The fact that I've done everything possible on my physical and mental side. Every facet is covered. . .that reassures my conscious mind that I've done everything--then I just have to let myself switch off and let it happen."

Confidence and positive attitude. Sixty-four percent of the athletes brought up a theme related to confidence or positive attitude, making it the dimension with the equal highest number of athletes mentioning a theme within it. Representing 11.6% of all raw data themes, the five higher order themes in this dimension were: confidence, believing you can win, positive thinking, blocking negatives, and enjoying what doing. A rugby player spoke of the positive spiral confidence led to: "Confidence--once you start doing things right, it just builds, and builds, and builds." For some athletes, the confidence was in being able to perform well, for others it was in believing one could win. Several of athletes spoke specifically about the challenge-skill balance deemed so important by Csikszentmihalyi. For example, one athlete said: "I think probably the most important is the feeling that I've got the ability to be in that situation." Just as the being physically prepared tied into confidence, confidence was found to be related to one's physical preparation. For example, a rower said: "Confidence--you've got to be confident that you can, that you are going well. But that is built up over months. That's the training effect, you need positive reinforcement to overcome anxiety."

Optimal physical preparation and readiness. Fifty-seven percent of the athletes spoke of the importance of being physically ready in order to make flow more likely to occur. Eighteen themes, representing 13% of all the raw data themes, were grouped into four higher order themes: having done the training, be in great physical shape, hydration and good nutrition, and being rested/tapered/peaked. As well as knowing that one had put in the physical work, a theme running through many of the athletes' comments was that good training led to confidence, itself another dimension of ideas important for getting into flow. Here is how a rower expressed it: "If it's going good in training you get confidence from that and you can approach your race in a confident state--confident that you've done it all before and you can do it now." For some athletes, making sure that they were well hydrated, rested, or tapered, was essential to being able to get into a flow state. Obviously,

the demands of the sport play a role here. The two athletes who specifically mentioned hydration, for example, were both rowers. One of these two rowers very graphically explained the effect of good hydration:

> How hydrated you are . . . like if your nerves are zinging, you can feel when your nerves are sensitive and really open, your outside receptors are working really well; and if you're not hydrated enough, the receptors aren't working well, you don't start to sweat easily, and your movements won't be crisp.

Achieving optimal arousal level before compete. Representing 57% of the sample, and involving 13% of all raw data themes, this dimension had two higher order themes, relaxation, and getting self energized before compete. For the majority of the athletes citing themes within this dimension (64%), being relaxed was key, although four did favor a more energized state.

Motivation to perform. This dimension represented themes relating to being motivated to achieve, to do well, and having reasons for wanting to do well. These themes made up 12.3% of all the raw data themes, and were mentioned by 54% of the sample. Three higher order themes, representing 20 raw data themes, were titled, having goals, high motivation, and challenging situation. "You have to know it's a race you've set as a goal", said a triathlete, and his comment illustrates what several of the athletes said: the event is an important one to you, and one for which you have set goals. A field hockey player described how placing importance on the event helped her get into flow: "The more important that I perceive it, the higher the pressure, the better I perform. More in flow--you become so single-minded on the task."

Performance feeling good. Fifty percent of the athletes talked about their performance feeling good as being an important factor for being able to get into flow. This dimension involved two higher order themes, start well/feel good from the start, and movements feeling good, and contained 8.7% of all raw data themes. Just what feeling

good involved depended on the athlete and the sport, but the underlying idea seemed to be that the athlete was receiving feedback from his or her movements that things were in tune, whether it be technique, rhythm, feeling in control of one's body, or ease of movement.

Focus. Being focused was mentioned specifically by 39% of the athletes, and this dimension represented 5.1% of all raw data themes. There were two higher order themes, focus, and release of conscious control. One athlete summed up well why this dimension of focus was important: "Concentration totally engrosses you in the game, so I guess to achieve flow state you need to have good powers of concentration." Another athlete talked about keeping everything simple in her mind, which would allow her mind to relax: "I like to keep it really simple . . . I always like to take what might be 20 points down to 3 or 4 points and keep everything simple and clear . . . and then your mind can relax." Thus, again what is coming through in some of the athletes' comments is that there is interdependence between factors that help one to get into flow.

Optimal environmental and situational conditions. For 39% of the athletes, having optimal environmental and/or situational conditions, was important for getting into flow. These conditions included the higher order themes, good course/event for self, good environmental conditions, good atmosphere, no outside pressures, and positive feedback from coach. Type of sport probably plays a role in how important the environmental/situational conditions are. For example, two rowers said no wind was very important. For a track runner, length of the event played a role, with it being difficult for him to get into flow in the shorter races. As well as sport type, it seems evident that this was an individual difference factor, since only 10 of the athletes mentioned environmental or situational themes.

Positive team play and interaction. For 25% of the athletes, experiencing positive team play and interaction was important for being able to get into flow. Since there were only 11 team sport athletes in the sample, the percentage of all team sport athletes that

this dimension represented was calculated. Sixty-four percent of the team sport athletes thought the team was a significant influence on whether or not they got into flow. Three higher order themes, representing 8.7% of all raw data themes, were titled, positive team interaction, team moving as a unit, and team/partner focused. Ideas represented in this dimension included that there was trust between players, a positive feeling on the team, unison of movements, and focus among interacting teammates.

Experience factor. Two somewhat unique themes were put into this dimension. One, the idea that you had experienced flow before, so you knew what to expect. The other theme was related to being a mature, or experienced competitor, so that one could deal effectively with situations that might prevent, or disrupt flow from occurring.

Summary of Factors Helping Flow

Ten dimensions were found to represent the 131 raw data themes of factors helping an athlete to get into flow. The dimensions representing the greatest percentage of athletes were **Pre-Competitive and Competitive Plans and Preparation** (64%) and **Confidence and Positive Attitude** (64%). To get an estimation of how many of the dimensions were perceived by the athletes to be occurring together to influence whether flow occurred, the mean number of dimensions each athlete had themes within was calculated. A mean of 4.6 dimensions was obtained, with a range of between two and seven dimensions. Thus it seems that several of the antecedent flow factors may need to be occurring for flow state to result. Table 17 lists all the dimensions with the higher order themes and raw data themes from which they were formed.

Table 17

Factors Important For Getting Into Flow: Inductive Analyses Results

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1. **PRE-COMPETITIVE & COMPETITIVE PLANS & PREPARATION**
   - 1.1. Being By Self Before Compete
     - 1.1.1. *having space/privacy*
     - 1.1.2. silence/time alone before play
     - 1.1.3. being by self when at competition
     - 1.1.4. being alone before race
     - 1.1.5. turning inward before race
   - 1.2. Follow Pre-Competitive Routine
     - 1.2.1. follow routine (5)
     - 1.2.2. follow routine so time occupied
     - 1.2.3. follow routine so not rushed
   - 1.3. Pre-Competitive Mental Preparation
     - 1.3.1. mental rehearsal
     - 1.3.2. being prepared so remove anxiety
     - 1.3.3. mental preparation pre-match
     - 1.3.4. imagery of perfect race
     - 1.3.5. good build up before game
     - 1.3.6. mental preparation before game
     - 1.3.7. having back-up to routine
   - 1.4. Race Plan
     - 1.4.1. race plan (4)
     - 1.4.2. planning/programming the pace
     - 1.4.3. lot of rehearsal of plan
     - 1.4.4. plan for "what ifs"/distracters
     - 1.4.5. use triggers: positive images/words in race
   - 1.5. Knowing Clearly What Going To Do
     - 1.5.1. having a clear plan of what going to do
     - 1.5.2. knowing exactly what going to do in race
     - 1.5.3. *familiarity with role/position*
   - 1.6. Being Totally Prepared
     - 1.6.1. being prepared-every facet covered
     - 1.6.2. being totally prepared so feel in control
     - 1.6.3. being prepared physically & mentally

2. **CONFIDENCE AND POSITIVE ATTITUDE**
   - 2.1. Confidence
     - 2.1.1. confidence (12)
     - 2.1.2. knowing capable to do whatever need to
     - 2.1.3. feel that have ability to be in that situation
     - 2.1.4. confidence in training
     - 2.1.5. feeling positive about self & ability
     - 2.1.6. *confidence building throughout game*
     - 2.1.7. *confident about opponent*

2.2. Believing You Can Win
  2.2.1. believing you can win
  2.2.2. *goal of winning*
2.3. Positive Thinking
  2.3.1. thinking positive
  2.3.2. positive thinking in warm-up
  2.3.3. positive attitude
  2.3.4. accepting thoughts and feelings
2.4. Blocking Negatives
  2.4.1. block negative thoughts (3)
  2.4.2. not getting frustrated
2.5. Enjoying What Doing
  2.5.1. enjoying what doing (2)

3. OPTIMAL PHYSICAL PREPARATION AND READINESS

3.1. Having Done The Training
  3.1.1. good training (2)
  3.1.2. know that done correct training for event
  3.1.3 have done a lost of training
  3.1.4. knowing you've done the work
  3.1.5. feel good about self-know that done the work
  3.1.6. *seeing the reward(improvement)*
3.2. Be In Great Physical Shape
  3.2.1. being comfortable physically (fitness)
  3.2.2. physical fitness & ability
  3.2.3. be in great physical shape
  3.2.4. physical preparation-so very fit
  3.2.5. fitness
3.3. Hydration & Good Nutrition
  3.3.1. hydration & timing of eating
  3.3.2. being well hydrated
  3.3.3. good nutrition
3.4. Being Rested/Tapered/Peaked
  3.4.1. being rested
  3.4.2. being tapered
  3.4.3. tapered & rested
  3.4.4. tapered & peaked

4. ACHIEVING OPTIMAL AROUSAL LEVEL BEFORE COMPETE

4.1. Relaxation
  4.1.1. being relaxed
  4.1.2. relax before game
  4.1.3. control emotions
  4.1.4. mentally & physically relaxed
  4.1.5. muscles relaxed
  4.1.6. be totally relaxed
  4.1.7. being relaxed going into game
4.2. Getting Self Energized Before Compete
  4.2.1. getting self aroused/excited before play
  4.2.2. *high adrenalin before play*

4.2.3. optimal arousal level: energized & ready to go
4.2.4. intense warm-up

5. **MOTIVATION TO PERFORM**
   - 5.1. Having Goals
     - 5.1.1. having goals
     - 5.1.2. realistic goals
     - 5.1.3. have set race as a goal
     - 5.1.4. setting & accomplishing goals
   - 5.2. High Motivation
     - 5.2.1. high motivation to do well (4)
     - 5.2.2. desire to achieve goal
     - 5.2.3. high motivation-physically charged up
     - 5.2.4. wanting to race, ready to go
     - 5.2.5. motivation to compete well
     - 5.2.6. feeling aggressive about wanting to do personal best
     - 5.2.7. looking forward to training session
     - 5.2.8. *being very emotional/determined about race*
     - 5.2.9. reminding self of importance of event
     - 5.2.10. placing high importance on situation
   - 5.3. Challenging Situation
     - 5.3.1. having reasons for playing-setting challenges
     - 5.3.2. high challenge
     - 5.3.3. challenging situation

6. **PERFORMANCE FEELING GOOD**
   - 6.1. Start Well, Feel Good From Start
     - 6.1.1. start well, feel good from start (5-1uncontrollable)
     - 6.1.2. get involved immediately in the play
   - 6.2. Movements Feeling Good
     - 6.2.1. *feeling good physically*
     - 6.2.2. feeling good in the water
     - 6.2.3. body feeling good, especially in warm-up
     - 6.2.4. *boat feeling good*
     - 6.2.5. going very fast & feeling comfortable at that speed
     - 6.2.6. feeling in total control of your body
     - 6.2.7. everything moving right before race
     - 6.2.8. good rhythm
     - 6.2.9. good technique
     - 6.2.10. form checks

7. **FOCUS**
   - 7.1. Focus
     - 7.1.1. being focused (5)
     - 7.1.2. concentration (3)
     - 7.1.3 keeping self-focused (2)
     - 7.1.4. being absorbed by situation
     - 7.1.5. focus out everything
     - 7.1.6. clear mind & keep it simple
   - 7.2. Release Of Conscious Control
     - 7.2.1. switch conscious off/subconscious on-let it happen

8. **OPTIMAL ENVIRONMENTAL AND SITUATIONAL CONDITIONS**
    - 8.1. Good Course/Event For Self
        - 8.1.1. *good course/venue for self*
        - 8.1.2. *length of event*
    - 8.2. Good Environmental Conditions
        - 8.2.1. *good environmental conditions* (2)
        - 8.2.2. *good weather*
    - 8.3. Good Atmosphere
        - 8.3.1. *hyped-up atmosphere*
        - 8.3.2. *crowd behind you*
    - 8.4. No Outside Pressures
        - 8.4.1. no outside pressures (2)
        - 8.4.2. positive social relationships & feedback
    - 8.5. Positive Feedback From Coach
        - 8.5.1. *receiving positive feedback from coach* (2)
        - 8.5.2. *having good psychological coaching*

9. **POSITIVE TEAM PLAY AND INTERACTION**
    - 9.1. Positive Team Interaction
        - 9.1.1. talking to teammates
        - 9.1.2. feeling part of team
        - 9.1.3. *being part of team*
        - 9.1.4. positive interaction with teammates
        - 9.1.5. *trust between players*
        - 9.1.6. *positive feeling on team*
        - 9.1.7. *positive team attitude*
    - 9.2. Team Moving As A Unit
        - 9.2.1. being a unit with teammates
        - 9.2.2. *team moving well, as a unit*
        - 9.2.3. *team in unison*
    - 9.3. Team/Partner Focused
        - 9.3.1. *team being focused*
        - 9.3.2. *partner also focused*

10. **EXPERIENCE FACTOR**
    - 10.1. Experience In Sport
        - 10.1.1. *maturity/experience in sport*
        - 10.1.2. have experienced flow before, so know what after

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Notes.
1. The 3 levels of headings represent the 3 stages of the inductive analysis, e.g.,
    1. General Dimension
        - 1.1. Higher Order Theme
            - 1.1.1. Raw Data Theme
2. Themes in italics perceived as uncontrollable factors
3. Numbers in parentheses reflect number of athletes citing raw data theme (when > 1)

Factors Preventing Flow

Nine dimensions were inductively formed to represent the factors that prevent an athlete from getting into flow. These dimensions, the percentage of athletes citing a theme within each dimension, and the percentage of all raw data themes that each dimension represents, are shown in Table 18. There were 104 independent raw data themes extracted from the data to answer the question as to what factors prevent an athlete from getting into flow. An external checker independently classified the raw data themes into the 33 higher order themes, and the higher order themes into the general dimensions. There was 100% agreement at the raw data theme level, and 97% agreement at the higher order theme level. The one higher order theme classified differently to the investigator was discussed, and subsequently moved to a different dimension, where there seemed to be a better fit between ideas expressed in the theme and the new dimension into which it was placed.

Each dimension will be discussed below in relation to the themes from which it was comprised. Dimensions are discussed in order of percentage of athletes each represents, as presented in Table 18.

Non-optimal physical preparation and readiness. Seventy-five percent of the athletes mentioned a theme comprising this dimension, making it the dimension with the greatest percentage of athlete representation. There were five higher order themes derived from the raw data themes, which made up 23.1% of all themes in this analysis. These higher order themes were: not being physically prepared, not feeling good physically, food/fluid intake problems, fatigue, and injury. If an athlete knew he or she had not done the necessary training to be in good shape for the event, getting into flow was perceived as less likely to occur. Being fatigued from heavy training was also recognized as a factor preventing flow, and finding a balance between too much and not enough training often

Table 18

Factors Preventing Flow General Dimensions, Percentage Of Athletes Citing Themes Within Each Dimension, And Percentage Of All Raw Data Themes Represented By Each Dimension

% Athletes Citing	Factors Preventing Flow General Dimension	% Of All Raw Data Themes
75	Non-Optimal Physical Preparation & Readiness	23.1
64	Non-Optimal Environmental & Situational Conditions	18.3
43	Lacking Confidence/Negative Attitude	10.6
36	Inappropriate Focus	13.5
29	Problems With Pre-Competitive Preparation	8.7
25	Lacking Motivation To Perform	7.7
25	Non-Optimal Arousal Level Before Compete	3.9
21	Negative Team Play & Interaction	7.7
18	Performance Going Poorly	6.7

presented a challenge, as explained by this triathlete: "Fatigue, from previous days' training--it's training load as much as anything that prevents you getting there, but it's a Catch-22 because the only way you can get to that state is to have a heavy training load."

Non-optimal environmental and situational conditions. This dimension, containing 18.3% of all raw data themes, was relevant to 64% of the athletes. Six higher order themes made up this dimension, and were titled: non-optimal environmental conditions, unwanted crowd response, uncontrollable event influences, external stresses, emotional stress, and influence of opponents. Non-optimal conditions included wind, extremes of temperature, and if conditions were different to what expected. Unwanted crowd response was too much crowd noise for one athlete, and not enough crowd response for another. Uncontrollable event influences included things such as getting a flat tire, or what the type of course was. Stress from work, or relationships, particularly that causing emotional upset, stood in the way of flow, as illustrated by this athlete:

> Emotions tend to interfere with it. . . your feelings about people, places. . . if you consider how you will feel after it's over, you go right off the end. . . emotions are something that are really powerful that can stuff you up and force you out of that state.

Finally, the influence of opponents was seen as a factor preventing flow, either through not being knowledgeable about their moves, having them directly block your play, or hinder your ability to perform well in a race.

Lacking confidence/negative attitude. Forty-three percent of the athletes mentioned themes that went into this dimension, and these themes made up 10.6% of all raw data themes. Lacking confidence, non-optimal mental state, negative thinking, and not believing you can reach the flow state were the four higher order themes making up this dimension. How one was feeling about oneself, and one's abilities impacted whether flow could occur, with self-doubt and negative thinking definitely standing in the way. A cyclist commented, "I think the more you can try and switch those negatives, the more you can

approach the flow". In quite an insightful comment, a cyclist said that not believing you could reach the flow state would be a factor preventing you from getting there, and the uniqueness of this response led it to being classed in an independent higher order theme.

Inappropriate focus. This dimension, representing 14.5% of all raw data themes, involved 36% of the sample's responses. Five higher order themes were titled, losing focus, thinking too much, being over-concerned with what others were doing, worry about what others think of you, and worrying about competitors. Often the inappropriate focus was due to "being distracted, losing concentration, losing your focus on where you are at that point", and, as this runner continued, "going more to the outcome as opposed to the segment of your plan-losing focus on the plan." Thinking too much was a problem for other athletes, especially when it led one to being over-analytical, or over-concerned with what others were doing, be it teammates or opponents. This "taking on the responsibility of other people", as a track runner put it, took one's focus away from oneself and one's own performance.

Problems with precompetitive preparation. Twenty-nine percent of the athletes referred to problems with their precompetitive preparation as being factors preventing flow. The three higher order themes making up this dimension, which included 8.7% of all raw data themes, were: poor precompetitive preparation, interruptions to precompetitive preparation, and distractions before compete. Not being prepared for the event would be a big stumbling block, as illustrated by this runner's realization that not having a race plan would stand in the way of flow: "If you stand up on the block and just expect it to happen, and haven't thought about what you want to think about, it won't happen." If one's routine was broken, or there was a distraction of some sort, particularly as the time to compete approached, flow would be less likely to occur.

Lacking motivation to perform. This dimension, representing 25% of the athletes' responses, was made up of three higher order themes: no goals, low motivation,

and lack of challenge. These themes made up 7.7% of all the raw data themes. Clearly, for the athletes who mentioned it, not having the motivation or commitment to what one was doing would prevent flow state, as evidenced by these comments: "You've got to have 100% commitment", and "It's really hard to get into that state because you can talk to yourself, but if it's not 100% believed, and thought of, and needed, and desired, then you don't get it." Two athletes commented specifically on the deleterious effect of lack of challenge in the situation.

Non-optimal arousal level. This dimension also represented 25% of the athletes' responses, however there were fewer themes, with only 3.9% of all raw data themes being represented. Feeling too relaxed was a problem for one athlete, making this an independent higher order theme from the other higher order theme, not being relaxed. This latter was recognized as a problem by six athletes.

Negative team play and interaction. Twenty-one percent of athletes saw problems with the team play and/or interactions as being something which could prevent flow. Again, the percent of team sport athletes for which this dimension was relevant was calculated and was found to be just over half (55%). Four higher order themes, involving 7.7% of all raw data themes, grouped the responses in this dimension. These higher order themes were: team not performing well, partner not focused, negative team interaction, and not feeling part of the team. The team is obviously only a factor in certain sports, and the extent of it's influence depends again on the sport. A team pursuit cyclist saw that the team pace not being smooth would be a major problem: "If things aren't going smoothly, that would prevent it because I think things have to be going smooth. The pace--if someone upsets the nice smoothness of it, it upsets your rhythm, upsets your focus." For one hockey player, it was only the people in close proximity to you that could prevent you getting into flow, if they were not performing and working well together. Negative team

interactions included negative talk or negative feelings within the team. And if one did not feel part of the team, or trusted by the team, these factors too would prevent flow.

Performance going poorly. Eighteen percent of the athletes talked about the deleterious effects of one's performance going poorly, either through having a poor start, the performance not going well, or making unforced errors, the three higher order themes making up this dimension. One rugby player spoke without hesitancy of what happened when he got off to a bad start: "I've never been in a sense of flow when we've got off to a bad start. If you start badly, you just go downhill." Things not going to plan could prevent flow, as this runner recognized: "When things aren't in a steady state--in competition things can happen which you don't expect . . . things not going to plan." Making errors, having poor technique, and even very minor changes to position could prevent flow, as illustrated by this track cyclist's comment:

> I mean really small, like you might look at a different place on the track or you might move the handlebars just like that a bit and it'll put you off, or really really little things. Wish my mind wouldn't work that fast. I think it's a case of where sometimes the mind is trying to do so well, that it overcompensates on everything in a way.

Summary of Factors Preventing Flow

Nine dimensions were found from the inductive analysis of the 104 raw data themes of factors preventing an athlete from getting into flow. The dimension titles closely paralleled those given to represent factors that help an athlete to get into flow, and each of the prevent flow dimensions can be seen as an opposite of the help flow dimensions, as is shown in Table 14. The dimensions representing the greatest percentage of athletes in the prevent flow analysis were **Non-Optimal Physical Preparation and Readiness** (75%) and **Non-optimal Environmental and Situational Conditions** (64%). To get an estimation of how many of the dimensions were perceived as relevant to each athlete, the mean number of dimensions each athlete had themes within was calculated. A mean of 3.4

dimensions was obtained, with a range of between one and six dimensions. It may be that several of the preventive flow factors occur simultaneously in a situation to prevent flow, or that different preventive dimensions operate in different situations. Table 19 lists all the dimensions, with the higher order and raw data themes from which they were formed.

Table 19

Factors Preventing Flow: Inductive Analyses Results

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1. **NON-OPTIMAL PHYSICAL PREPARATION AND READINESS**
    - 1.1. Not Being Physically Prepared
        - 1.1.1. interruption to training so don't feel physically prepared
        - 1.1.2. irregularities in preparation
        - 1.1.3. not having done the preparation
        - 1.1.4. not having done the work leading up to race
        - 1.1.5. insufficient preparation
        - 1.1.6. not preparing
        - 1.1.7. not in physically good form
        - 1.1.8. lacking fitness
        - 1.1.9. lack of physical preparation/readiness
    - 1.2. Not Feeling Good Physically
        - 1.2.1. *bad physical state*
        - 1.2.2. body not feeling good
        - 1.2.3. *physically not feeling good* (4)- uncontrollable-2
        - 1.2.4. excessive pain
    - 1.3. Food/Fluid Intake Problems
        - 1.3.1. what and when eaten
        - 1.3.2. *food/fluid problems*
        - 1.3.3. poor diet
    - 1.4. Fatigue
        - 1.4.1. fatigue (2)
        - 1.4.2. *feeling tired from session before*
        - 1.4.3. *being overtrained or tired*
        - 1.4.4. fatigue from training load
        - 1.4.5. *bad night's sleep*
    - 1.5. Injury
        - 1.5.1. *being injured* (3)
        - 1.5.2. *injury/strain in warm-up or in game*
        - 1.5.3. *injury/illness*

2. **NON-OPTIMAL ENVIRONMENTAL & SITUATIONAL CONDITIONS**
    - 2.1. Non-Optimal Environmental Conditions
        - 2.1.1. *environmental factors* (3)
        - 2.1.2. *if conditions different to what expected*
        - 2.1.3. *extremes of temperature*

2.2. Unwanted Crowd Response
- 2.2.1. *too much crowd noise*
- 2.2.2. *lack of crowd response*

2.3. Uncontrollable Event Influences
- 2.3.1. getting a flat tire
- 2.3.2. *forced/uncontrollable errors*
- 2.3.3. *length of event/type of course*

2.4. External Stresses
- 2.4.1. *outside stress* (2-uncontrollable -1)
- 2.4.2. *family/social problems*
- 2.4.3. *external pressures*

2.5. Emotional Stress
- 2.5.1. fight with coach
- 2.5.2. emotions, especially those tied to anticipated outcomes
- 2.5.3. emotional stress
- 2.5.4. allowing something trivial to upset me
- 2.5.5. people upsetting me & letting people get to me

2.6. Influence Of Opponents In Competition
- 2.6.1. *lack of knowledge about opponent*
- 2.6.2. *opposition blocking your play*
- 2.6.3. influence of other people in race

3. LACKING CONFIDENCE/NEGATIVE MENTAL STATE

3.1. Lacking Confidence
- 3.1.1. lack of confidence (4)
- 3.1.2. self-doubt
- 3.1.3. how feeling about self/confidence
- 3.1.4. low confidence
- 3.1.5. *not experiencing feeling of confidence building in game*

3.2. Non-Optimal Mental State
- 3.2.1. not being able to control mental state
- 3.2.2. state of mind leading up to race

3.3. Negative Thinking
- 3.3.1. negative thinking
- 3.3.2. negative self-talk
- 3.3.3. not thinking about enjoyment of game-thinking of negatives
- 3.3.4. not believing you can reach flow state

4. INAPPROPRIATE FOCUS

4.1. Losing Focus
- 4.1.1. losing focus
- 4.1.2. thinking ahead
- 4.1.3. mind not being on job
- 4.1.4. not being all in focus
- 4.1.5. concentration wandering
- 4.1.6. being distracted by other thoughts

4.2. Thinking Too Much
- 4.2.1. being over-analytical
- 4.2.2. thinking about too many things
- 4.2.3. thinking too much about tactics

4.3. Being Over-Concerned With What Others Doing
  4.3.1. thinking too much about what others doing
  4.3.2. frustration with teammates' effort
4.4. Worrying About What Others Are Doing
  4.4.1. *worry about what others think of you* (2-uncontrollable-1)
  4.4.2. worrying about competitors
  4.4.3. worry over what competitors can do

5. PROBLEMS WITH PRECOMPETITIVE PREPARATION
5.1. Poor Precompetitive Preparation
  5.1.1. not being organized
  5.1.2. not having good routine on race day
  5.1.3. not having a race plan
5.2. Interruptions To Precompetitive Preparation
  5.2.1. routine broken
  5.2.2. *if pre-game routine broken*
  5.2.3. interruptions to pre-game preparation
5.3. Distractions Before Compete
  5.3.1. *distractions before race*
  5.3.2. frustration from outside events before the game
  5.3.3. *outside major distraction*

6. LACKING MOTIVATION TO PERFORM
6.1. No Goals
  6.1.1. no goals
6.2. Low Motivation
  6.2.1. low motivation level (3)
  6.2.2. low motivation-not charged up
  6.2.3. low arousal/motivation level
  6.2.4. lacking full commitment for what you're doing
  6.2.5. low importance placed on game (2)
6.3. Lack Of Challenge
  6.3.1. *low challenge*
  6.3.2. *opposition not a challenge*

7. NON-OPTIMAL AROUSAL LEVEL BEFORE COMPETE
7.1. Not Being Relaxed
  7.1.1. being nervous
  7.1.2. being overly anxious
  7.1.3. not being relaxed (4)
7.2. Feeling Too Relaxed
  7.2.1. feeling too relaxed

8. NEGATIVE TEAM PLAY AND INTERACTION
8.1. Team Not Performing Well
  8.1.1. *team doing poorly*
  8.1.2. *team pace not smooth*
  8.1.3. people on team in close proximity not working well/performing

8.2. Partner Not Focused
  8.2.1. *partner not focused*
8.3. Negative Team Interactions
  8.3.1. negative talk within team
  8.3.2. *negative team feeling*
8.4. Not Feeling Part Of Team
  8.4.1. not feeling part of team
  8.4.2. *lack of team trust in self*

9. PERFORMANCE GOING POORLY
9.1. Poor Start
  9.1.1. poor start (2)
9.2. Performance Not Going Well
  9.2.1. things not going to plan during race
  9.2.2. falling back in the race
  9.2.3. poor technique
9.3. Unforced Errors
  9.3.1. unforced errors
  9.3.2. bad gear selection
  9.3.3. minor changes to body/bike position

Notes.
1. The 3 levels of headings represent the 3 stages of the inductive analysis, e.g.,
   1. General Dimension
      1.1. Higher Order Theme
         1.1.1. Raw Data Theme
2. Themes in italics perceived as uncontrollable factors
3. Numbers in parentheses reflect number of athletes citing raw data theme (when > 1)

Factors Disrupting Flow

Six dimensions were formed to represent the factors that disrupt an athlete once in flow. These dimensions, the percentage of athletes citing a theme within each dimension, and the percentage of all raw data themes that each dimension represents, are shown in Table 20. There were 62 independent raw data themes extracted from the data to answer the question as to what factors disrupt an athlete from being in flow. An external checker independently classified the raw data themes into the 17 higher order themes, and the higher order themes into the general dimensions. There was 94% agreement at the raw data theme level, and 100% agreement at the higher order theme level. The one raw data theme

classified differently to the investigator was discussed and subsequently moved to the higher order theme suggested by the checker.

Each dimension will be discussed below in relation to the themes from which it was comprised. Dimensions are discussed in order of percentage of athletes each represents, as presented in Table 20.

Table 20

Factors Disrupting Flow General Dimensions, Percentage Of Athletes Citing Themes Within Each Dimension, And Percentage Of All Raw Data Themes Represented By Each Dimension

% Athletes Citing	Factors Disrupting Flow General Dimension	% Of All Raw Data Themes
71	Non-Optimal Environmental & Situational Influences	56.5
25	Problems With Physical Readiness Or Physical State	12.9
21	Problems With Team Performance Or Interactions	11.3
18	Inappropriate Focus	9.7
14	Performance Errors/Problems	6.5
7	Doubting Or Putting Pressure On Self	3.2

Non-optimal environmental and situational influences. This was the largest dimension, containing 56.5% of all raw data themes, and involving 71% of the athletes. Eight higher order themes grouped the raw data themes and included: mechanical failure; something really funny occurring in game; inappropriate, negative, or no feedback; negative refereeing decisions; what opposition doing; performance disrupted by

competitors; stoppage in play; amount of time left in event; and environmental distractions. Mechanical failure was relevant for the cyclists and triathletes, and involved some problem with their bike. Something really funny occurring in the game was cited by a rugby player as causing momentary lapse out of flow. Problems with feedback could "wake you up", as a rower put it, commenting on the coach doing strange things in his feedback. Receiving a bad call from a referee was a factor for the rugby and field hockey players. Being outperformed by a competitor was disruptive to some, including this triathlete: "It's hard to stay positive if people are going away from you in the race even though you should probably know in the back of your mind that you're going as well as you can." On a similar line, unanticipated turns in play, "like you might be putting all the pressure on the other team and then suddenly they run 80 yards and score a try", would disrupt flow for the rugby player making this statement. Having competitors physically disrupt your performance was obviously disruptive of flow, examples being getting tripped up, or boxed in, during a track race. Six of the hockey and rugby players mentioned a stoppage in play, such as for an injury or half-time, as being disruptive of flow. For timed events, such as rowing and running, the amount of time left in the event was relevant, for example, a runner commented that he would come out of flow towards the end of the race, "when you're really aware of what everyone is doing, so you're not just focusing on what you're doing." Finally, environmental distractions, such as unfavorable conditions, or sudden noises, would disrupt flow for some athletes.

Problems with physical readiness or physical state. This dimension, involving 25% of the athletes, contained 12.9% of all raw data themes. Lack of physical preparation/readiness was a higher order theme containing just one response, while the other higher order theme, non-optimal physical state, made up the majority of themes in this dimension. The ideas expressed within this theme included the disruptive effects on flow of pain, feeling sick or fatigued, or getting injured during the performance.

Problems with team performance or interactions. Twenty-one percent of all athletes, and 55% of all team sport athletes had a theme in this dimension, which included 11.3% of all raw data themes. There was just one higher order theme with the same title as the dimension, since the ideas expressed were all of a similar nature. Negative talk, the team not playing well, if you felt uninvolved in the play, or had the unfortunate experience described by a hockey player of "someone on my team that destroys everything you do, that can be quite frustrating.", could all disrupt flow.

Inappropriate focus. Mentioned by 18% of the athletes, problems with focus during performance accounted for 9.7% of all raw data themes. The two higher order themes were: loss of focus and worrying about others. Loss of focus could come about through daydreaming, as described by this triathlete" "When you've been in a flow situation and you've walked out somehow. Some thought popped in and drifted you." Or letting inappropriate thoughts creep in, such as worrying about competitors, or what others are thinking of you.

Performance errors/problems. Fourteen percent of the athletes cited performance errors or problems as disrupting flow, with all responses fitting into one higher order theme with the same title as the dimension. For the four athletes who expressed themes in this dimension, disrupters were such occurrences as a fall from one's bike, or making a major unforced error during a rugby game.

Doubting or putting pressure on self. Two athletes (7%) spoke about the disruptive influence of self-doubt or putting pressure on self, forming two higher order themes of the same names.

Summary of Factors Disrupting Flow

Six dimensions were formed from the 62 raw data themes of factors perceived as disrupting flow. The major dimension, accounting for 71% of all athletes' responses, was **Non-Optimal Environmental and Situational Influences**. To get an estimation of

how many of the dimensions were perceived as relevant to each athlete, the mean number of dimensions each athlete had themes within was calculated. A mean of 1.6 dimensions was obtained, with a range of between one and three dimensions. Thus it may be that the presence of just one of the dimensions may be enough to disrupt flow. All dimensions, with the higher order and raw data themes from which they were formed, are listed in Table 21.

Table 21

Factors Disrupting Flow: Inductive Analyses Results

1. **NON-OPTIMAL ENVIRONMENTAL & SITUATIONAL INFLUENCES**
    - 1.1. Mechanical Failure
        - 1.1.1. *puncture*
        - 1.1.2. *mechanical breakdown*
        - 1.1.3. *fright (puncture, mechanical breakdown)*
        - 1.1.4. mechanical failure
    - 1.2. Something Really Funny Occurring In Game
        - 1.2.1. *something really funny occurring in game*
    - 1.3. Inappropriate, Negative, Or No Feedback
        - 1.3.1. *inappropriate coach feedback*
        - 1.3.2. teammate/coach advice or criticism
        - 1.3.3. *receiving negative feedback about performance*
        - 1.3.4. *not receiving any feedback about performance*
    - 1.4. Negative Refereeing Decisions
        - 1.4.1. *bad refereeing decisions*
        - 1.4.2. bad call
        - 1.4.3. *referee penalizing you unfairly*
    - 1.5. What Opposition Doing
        - 1.5.1. *competitors moving away from you*
        - 1.5.2. *competitor outperforming you*
        - 1.5.3. *what opposition doing*
        - 1.5.4. *unanticipated turns in play*
        - 1.5.5. what other team is doing
    - 1.6. Performance Disrupted By Competitors
        - 1.6.1. *competitors disrupting your race*
        - 1.6.2. *getting tripped up*
        - 1.6.3. physical disruption during race from competitors
        - 1.6.4. *disruption from other riders*
        - 1.6.5. interference from other runners
        - 1.6.6. *competitors trying to distract you*
        - 1.6.7. *getting hassled a lot by opposition*
    - 1.7. Stoppage In Play
        - 1.7.1. *stoppage in play* (6)

1.8. Amount Of Time Left In Event
  1.8.1. *time of race (come out towards end)*
  1.8.2. *amount of time available*
  1.8.3. *length of event*
1.9. Environmental Distractions
  1.9.1. *outer distractions-environmental factors*
  1.9.2. *environmental disturbances*
  1.9.3. *sudden noise or distraction*
  1.9.4. *ongoing external distraction*
  1.9.5. *major distraction*
  1.9.6. *specific people in crowd yelling out to you*
  1.9.7. *people talking to you while you compete*

2. PROBLEMS WITH PHYSICAL READINESS OR PHYSICAL STATE
2.1. Lack Of Physical Preparation/Readiness
  2.1.1. lack of physical preparation/readiness
2.2. Non-Optimal Physical State
  2.2.1. *physical state*
  2.2.2. *being sick/physical illness*
  2.2.3. *pain-hurts more than expected*
  2.2.4. *pain*
  2.2.5. *injury during game*
  2.2.6. *body exhaustion*
  2.2.7. *fatigue*

3. PROBLEMS WITH TEAM PERFORMANCE OR INTERACTIONS
3.1. Problems With Team Performance Or Interactions
  3.1.1. negative talk within team
  3.1.2. *negative talk on field*
  3.1.3. *team player destroying your plays*
  3.1.4. *team not playing well*
  3.1.5. *teammate blowing it*
  3.1.6. *lack of involvement in the play*
  3.1.7. *team pace upset*

4. INAPPROPRIATE FOCUS
4.1. Loss Of Focus
  4.1.1. losing focus
  4.1.2. daydreaming
  4.1.3. not focusing
  4.1.4. loss of concentration
4.2. Worrying About Others
  4.2.1. letting competitors control you-by worrying about their ability
  4.2.3. worry about what others think

5. PERFORMANCE ERRORS/PROBLEMS
5.2. Performance Errors/Problems
  5.2.1. *disruption to plan during race*
  5.2.2. major unforced error

5.2.3. not playing well
5.2.4. a fall

6. DOUBTING OR PUTTING PRESSURE ON SELF
6.1. Self-Doubt
5.1.1. self-doubt
6.2. Putting Pressure On Self
5.2.1. putting pressure on self

Notes.
1. The 3 levels of headings represent the 3 stages of the inductive analysis, e.g.,
1. General Dimension
1.1. Higher Order Theme
1.1.1. Raw Data Theme
2. Themes in italics perceived as uncontrollable factors
3. Numbers in parentheses reflect number of athletes citing raw data theme (when > 1)

Disruption Of Flow: Does it Necessarily Occur?

Athletes were asked whether once in flow, they were more likely to stay in flow for the duration of the event, or whether flow was a state they would come in and out of during the event. Sixteen, or 57% said that once in flow, they were most likely to stay in flow. Eight, or 29% said flow was something they would come in and out of, and four (14%) said both outcomes could occur, depending on the particular situation. The above inductive analysis of factors disrupting flow illustrates the type of events that could bring an athlete out of flow. For some athletes, however, it seemed that nothing could break the flow, at least in some situations. For example, a rugby player said even during the half-time talk, he remained in flow: "Even during the half-time talk, I don't relax at all during it, I actually don't take anything in. The captain or coach will speak and generally at the end of the game I won't remember what they've said, I'm just in my own world."

Being in one's own world can sometimes be a dangerous thing, as one triathlete explained that she had twice been hit by a car while cycling. This athlete had a very strong ability to become intently focused, and to hold a flow state for an extended period of time.

In the following quotation, she describes this ability, illustrating it with her participation in a 265 mile bike race:

> If you're focusing on an event it's almost as if the event becomes a capsule, it's not a part of the real world. . . just seems to stay whatever the race is. For 16 and a half hours I was in it basically. If you ask me did that feel like 16 and a half hours, I'd say it felt like about 3 hours. . . it's an umbrella.

Finally, one athlete said nothing would disrupt flow, no matter what the situation. This cyclist was the only athlete to not come up with any factors in the disrupt flow question. His description of a situation where many things could have disrupted flow, including several factors other athletes mentioned as being disruptive, indicates the tenacious ability of some athletes to remain in flow in the face of adversity:

> If you've got it [flow], then you've got it by the neck . . . some of the experiences, like some of them are so horrific, you'd expect someone to just drop it in, just leave it. But what's happened to me I've been in this state and it's just gone on and on and on, it's just like there's just no stopping . . . it becomes a <u>total</u> challenge, and it becomes like the outcome doesn't matter anymore. It's like once I was in the rain, and I fell, I had a puncture in the front tire, then a puncture in the back tire, I fell on the cobbles, and I got quite hurt, and then I still had to get across to the breakaway on top of all that, and I was <u>expected</u> to do it which was more pressure, but it all just turned into a challenge . . and I was in flow . . . and two hours just went like "phh"--like half an hour.

Perhaps it is the ability of some athletes to keep the flow no matter what the situation that creates both extremely memorable experiences, and outstanding achievements.

<u>Purpose 3 Results</u>

<u>The Perceived Controllability Of Flow</u>

The third purpose of this investigation was to examine the perceived controllability of flow. Athletes were asked whether they perceived flow to be controllable, and were also asked to rate each of the help/prevent/disrupt flow factors they derived relative to their controllability. The findings to both of these questions are given below.

Seventy-nine percent of the athletes perceived flow to be a controllable state, while 21% said they did not think flow was controllable. Quotations illustrating the different perceptions athletes had to the controllability question are presented below.

For some athletes, flow was very controllable, perhaps programmable, as indicated by this statement by a rower: "I make it happen. It doesn't happen automatically. I make it happen." The athletes who said flow was controllable tended to take responsibility for whether or not flow occurred. For example, a triathlete said:

> I think you can set it up. You can set the scene for it, maybe with all that preparation. It should be something that you can ask of yourself and get into, I think. Through your training and through your discipline, because you have to be the one that reads your body.

Another triathlete, agreeing flow was controllable, said, "You've got to be able to train yourself to get there--learning to train your mind to focus."

Several of the athletes said flow was controllable so long as all the factors they had brought up as helping flow were in place. Thus said a rugby player, "As long as none of the ingredients are missed." And a hockey player, "If all those positive factors are going right then there's nothing going to stop me." Some athletes recognized that the extent of controllability was dependent on the extent of control one had over the factors that helped one to get into flow. For example, a rower said, "I definitely think you can control it, but sometimes it's really easy and sometimes it's a lot harder to control, and that's got to do with a lot of those factors." A swimmer saw himself as having only partial control over the factors helping him to get into flow, and thus saw flow as "probably partially in your control".

For some athletes who perceived flow as controllable, there were qualifiers to whether flow would actually occur. A runner said she had control of flow by having control over most of the factors that helped her to get there, but "just a few things that just happen to

you before a race, probably within the last 18 to 24 hours is just crucial to your performance and sometimes you don't have control over that last 24 hours." For a javelin thrower who extensively discussed the struggle between the conscious and subconscious mind, whether flow would occur depended on which part of her mind won out:

> Yeah, it's controllable but it's the battle between your conscious and subconscious, and you've got to tell your conscious mind to shut up and let the subconscious take over, which it will because it's really powerful.

A triathlete who recognized the importance of being rested and tapered for flow to occur, saw that sometimes he would forsake his chances of getting into flow due to his workload:

> Normally I don't see any reason why I can't get to that state . . . well, you can't rest all the time, so there's got to be weeks when you can't get into that flow state because of the amount of work load I've done during that week--that is part of the trade-off of trying to improve.

Flow was not a term all athletes were familiar with, nor was the state one that all athletes had consciously thought about, and the interview process became a self-awareness experience for several of the participants. A hockey player, after discussing the factors that she thought would help her get into flow, said, "Yes, I think it's probably more controllable than I realize . . . perhaps I don't have as much control over it as I could." Another hockey player, who initially had trouble with the interview questions, gained in her understanding and confidence about flow during the course of the interview. Here is an excerpt from a dialogue between the athlete and interviewer, which illustrates her change of perspective:

Athlete: I think you can control it. Like up until now, I would have said not controlling it, but you probably can control it. Being aware of it and knowing about it, so you can work towards it.

Interviewer: If I'd asked you that question right at the start after you started talking about the last 15 minutes, would you have said that it was controllable or uncontrollable?

Athlete: I would have said uncontrollable. I probably would have thought it's something that just happens.

For a swimmer, a similar growth in self-awareness and perceived control occurred through her working with a sport psychologist. She commented, "Before that, it was very . . . spontaneous, is that the right word?" When the swimmer was asked whether flow was now more under her control, she said, "Yeah, definitely."

A rower who perceived flow as only partly controllable had this to say:

> I think you can improve the chance of it happening . . . but it is a little bit of magic, like that's why we say that you can't really describe it, or guarantee it or anything. I think it's definitely a little bit setting the stage if you like for trying to make it happen. I think it's what you're looking for all the time.

One athlete, a rugby player said flow was controllable, but sometimes it's occurrence was separate to his input:

> For me it's something you can see is almost totally dependent upon my preparation . . . most of the times I achieved that state this year has been through my own controlling it. But sometimes, for example, the last 15 minutes of the game I was talking about earlier, just the pure action of what happened in the game, I had no influence on. And that's what I mean, sometimes you have control over it, but at certain times you don't need to have any input, you're just there and you're taken along with it.

For six of the athletes, flow was not perceived as controllable. Rather, it was just something which just happened. A track cyclist said this about flow not being controllable:

> I think it's something that just happens because every time a person wants to go out, they want to do their best, and it's only once in a while that they pull out this fantastic ride and think, "Wow! Why can't I do this all the time? . . . There's always going to be things that you just can't control.

A rugby player said the best one could do to enhance flow occurring was "set the parameters around when it's most likely to occur, but I think it just happens." A rower

who was a member of an eight man crew said flow was not controllable due to the team aspect of what he did:

> It all comes back to the team--everybody, all the guys knitted in together and it just rolls along for 5, 10 minutes, half an hour, going very well, but then someone might lose concentration or go off beat or something and then you'd be out of that situation you were just in, and you can't have any control over that.

Interestingly, when I asked this rower if he was in a single sculls event, whether he would perceive the flow state to be controllable, he agreed that he would see it as such.

To summarize the findings about the perceived controllability of flow, the majority of the athletes did see the flow state as within their control to achieve. Further, from the discussions about the controllability of flow, it was evident that being able to control flow was seen as an important ingredient to an athlete's success. A cyclist summed up this idea well: "I believe it is, the flow state is a controllable thing. But someone who can ideally or totally control that, has got a lot of power in the sport."

Perceived Controllability of Factors Related to Whether one Gets Into Flow

To further address the question of the perceived controllability of flow, athletes were asked to identify whether each of the factors they put forward in response to the questions about what helps, prevents, or disrupts, flow were controllable or uncontrollable factors. The percentage of controllable versus uncontrollable factors for each question are presented in Table 22. Note that the total number of themes for each analysis is greater than the total number presented when each analysis was discussed under Purpose 2. This is because every raw data theme was calculated in the present analysis whereas only independent themes were calculated in the totals for the help/prevent/disrupt analyses. Thus, if two or more athletes said the same theme, it was listed as one theme in these earlier analyses. Because some athletes mentioning the same theme differed in whether they saw the factor as controllable or uncontrollable, the total number of themes listed by all athletes was

included in the present analysis. Each raw data theme in Tables 17, 19, and 21, which list the results of the inductive analyses for factors helping, preventing, and disrupting flow respectively, is identifiable as either a controllable or uncontrollable factor. Hence, an inspection of Tables 17, 19, and 21 shows controllable factors typed in normal text, and uncontrollable factors which are italicized.

Table 22

Frequency Of Controllable Versus Uncontrollable Flow Factors

FACTOR	CONTROLLABLE	UNCONTROLLABLE	TOTAL N
Help Flow	140 (82.4%)	30 (17.6%)	170
Prevent Flow	86 (69.4%)	38 (30.6%)	124
Disrupt Flow	19 (28.4%)	48 (71.6%)	67
Total N	245 (67.9%)	116 (32.1%)	361

As can be seen from Table 21, there was a much higher percentage of factors perceived as controllable than uncontrollable. Overall, 67.9% of the 361 factors found across the three questions were perceived as controllable. For the factors that help an athlete to get into flow, 82.4% were perceived as controllable. Just under seventy percent of the factors preventing flow were perceived as controllable. A change in the trend for most factors to be perceived as controllable was found for the factors disrupting flow. Here, 71.6% of the factors were perceived as uncontrollable. This finding indicates that for flow to be disrupted, it will more often come from an uncontrollable than a controllable factor.

Purpose 4 Results

Relationship of Flow to Peak Performance and Peak Experience

The fourth purpose of this investigation was to investigate the relationships between flow, peak performance, and peak experience. The exploratory research question asked was: are flow, peak performance, and peak experience recognized by athletes as independent, experientially defined events? To answer this question, both quantitative and qualitative analyses were used. Quantitatively, athletes' mean flow scores on the Experience Questionnaire (Privette, 1984) items were compared to Privette and Bundrick's (1991) mean scores for flow, peak performance, and peak experience. Qualitatively, athletes' responses to questions about the relationship between the three constructs were compiled, and summary statements were made based on these responses.

Athletes' mean item scores on the Experience Questionnaire are shown in Table 22. The items are grouped into the eight factors Privette and Bundrick (1991) found, and the athletes' mean score for the item is shown in column 1. Columns 2 to 4 show the mean item score found by Privette and Bundrick for three experiences respectively: flow, peak performance, and peak experience. An '*' is placed next to the item score from these three columns most closely associated with the item score found for the athletes in this study. This allows for a visual comparison of the scores found for the athletes' flow experience and the score to which it was most closely aligned from the scores Privette and Bundrick found for flow, peak performance, and peak experiences.

As can be seen in Table 22, athletes' item scores were often more similar to Privette and Bundrick's (1991) item scores on peak performance and peak experience than to flow. Of the 47 items, eighteen scores were most closely associated with Privette and Bundrick's peak performance scores, 18 with peak experience, and 11 with flow.

Privette and Bundrick (1991) described the factors their respondents most strongly endorsed for flow, peak performance, and peak experience. These were discussed in the

introduction. The factors most strongly endorsed by the athletes' flow experience were: self in clear process, full focus, significance, and fulfillment. The first two factors correspond to factors most strongly endorsed in Privette and Bundrick's peak performance, the second two to Privette and Bundrick's peak experience. Only one of the factors Privette and Bundrick found to be most strongly endorsed in flow was found to be moderately endorsed by the athletes' flow experience: the factor of play.

Caution must be exercised in interpreting the results found on the Experience Questionnaire, due to the small sample size and the nature of the sample used in this study. Further, a different definition of flow was used in this study to Privette and Bundrick. The definition of flow used in this study was based on Csikszentmihalyi's definition of flow. Privette and Bundrick took an isolated aspect of Csikszentmihalyi's definition, that of playing a sport or game, and this difference in definitions may also have influenced the scores. Finally, since only one score was obtained for the athletes, a flow score, it cannot be concluded from these results whether the athletes differentiated between flow, peak performance, and peak experience.

The qualitative analyses of athletes' responses to open-ended questions about the relationship between flow, peak performance, and peak experience revealed little support for the independence of these constructs. Athletes were asked to comment on how they perceived flow, peak performance, and peak experience to be related, after a discussion of a peak performance and a peak experience that they had experienced. Peak performance was defined as performing at one's optimal, or highest level, in sport. Peak experience was defined as a moment of highest happiness and fulfillment, while participating in sport.

Most athletes did not recognize flow, peak performance, and peak experience to be independent, experientially defined events. Seventy-five percent said flow was always part of their peak performances, with 25% saying they could achieve peak performance without it necessarily involving flow. Seventy-one percent said they could peak experiences

Table 23

Mean Item Scores For Athletes' Flow Experience Compared To Privette and Bundrick's (1991) Item Scores For Flow, Peak Performance, and Peak Experience

Factor Item	Athletes' Flow Score	Privette & Bundrick's Flow Score	Privette & Bundrick's Peak Performance Score	Privette & Bundrick's Peak Experience Score
Factor 1: Self In Clear Process (M = 4.6)				
• clear inner process	4.64	3.55	4.20*	3.79
• felt all together	4.89	3.56	4.33*	4.14
• awareness of power	4.50	3.63	4.21*	4.09
• clear focus	4.93	3.63	4.21*	4.09
• strong sense of self	4.25	3.97	4.35*	4.44
• free from outer restrictions	4.18	3.67	3.66	4.00*
Factor 2: Full Focus (M = 4.3)				
• need to complete	4.82	4.19	4.50*	4.07
• absorption	5.00	4.21	4.74*	4.59
• intention	4.86	4.09	4.55*	4.34
• personal responsibility	4.21	3.48	4.49	4.29*
• overwhelmed other senses, thoughts	4.29	2.93	3.48	4.33*
• event an emergency	1.64	1.49*	2.62	2.10
• intensity	4.75	3.49	4.27	4.34*
• process "clicked" on	4.50	3.20	4.13*	3.80
Factor 3: Significance (M = 4.2)				
• significance	4.39	2.98	3.88	4.35*
• meaning	4.75	3.18	4.50	4.81*
• personal understanding, expression	3.26	3.17*	4.03	4.40
• personal value	4.75	3.09	4.12	4.61*
• actions, thoughts spontaneous	3.70	3.85*	4.07	4.14
• event was practiced	4.46	3.16	3.19*	2.33
Factor 4: Fulfillment (M = 5.4)				
• after feelings	4.82	3.89	4.61	4.80*
• feelings	6.21	4.87	5.68	6.60*
• performance	6.57	5.14	6.39*	6.19
• fulfillment	4.93	3.82	4.25	4.77*
• intrinsic reward	4.57	3.81	4.33	4.57*
Factor 5: Spirituality (M = 3.0)				
• loss of self	2.00	2.01*	2.17	2.09
• ineffable	3.57	2.20	3.15	3.97*
• spiritual	2.86	1.95	2.61*	3.63
• brief	2.82	2.85	2.80*	2.86
• loss of time and space	3.46	2.52	2.84	2.98*

Factor Item	Athletes' Flow Score	Privette & Bundrick's Flow Score	Privette & Bundrick's Peak Performance Score	Privette & Bundrick's Peak Experience Score
• differences resolved	2.15	2.15*	2.20	2.26
• unity of self and environment	3.86	3.43	3.61	3.88
Factor 6: Other People (M = 2.94)				
• enjoyed others	2.57	4.13	2.95*	4.05
• others influenced outcome	3.36	3.73*	3.75	3.87
• others contributed	4.11	4.16*	3.73	4.24
• interactive	3.68	4.20	4.24	4.12*
• encounter with person or something	2.50	3.78	3.62*	4.03
• spontaneous, not planned	1.39	2.89	2.82	2.64*
Factor 7: Play (M = 3.59)				
• prior related involvement	4.86	4.09*	3.96	3.39
• playful	2.14	4.29	2.37*	2.94
• fun	4.04	4.46	3.11	3.92*
• action or behavior	5.00	4.69	4.79*	4.55
• actions, thoughts new, not habitual	1.89	2.61*	3.20	3.84
Factor 8: Outer Structure (M = 2.53)				
• perceptual, not behavioral	2.04	2.42*	2.90	3.22
• receptive and passive	2.18	2.10	2.16*	2.63
• rules, motives, goals in structure	5.00	4.69	4.79*	4.55
• event nonmotivated	1.89	2.61*	3.20	3.84

Note.
An '*' indicates the item from Privette and Bundrick (1991) found to be most closely associated with the mean item score for the athletes in the present study.

always involved flow, with 29% saying a peak experience could occur without flow. Illustrative quotes on each of the relationships are included below.

Peak Performance and Flow

Most athletes said peak performance could only occur when they were in flow. A world champion triathlete had this to say:

> It's only when you're in a flow state that you're at optimal. You know, that you totally excel, because every condition, all of the circumstances that come together to make you feel that way are what is perfect for racing . . . I think all the exceptional performances in the world, all the real exceptional ones, come form a flow state and they actually come from extraordinary motivation.

This athlete knows what it is like to achieve an exceptional performance at a world level, something which she has accomplished many times in her career.

Other athletes endorsed the relationship between flow and peak performance. For example, a field hockey player said, "I think they're similar, like being in flow, how your body starts to feeling good and having this motivation and challenges, that's my feeling of peak performance as well, so I think they go together." A triathlete who had earlier likened being in flow to a car going downhill without having to turn the engine on, said that trying to achieve a peak performance without being in flow "would be like a car engine grinding, you were just out of gear." A swimmer, likening flow to feeling good while performing, reasoned that because he had never done a personal best and felt bad doing it, meant that flow and peak performance went together. For a rugby player, being able to have a game peak performance was dependent on being in flow:

> I think it would be fairly difficult, over the length of the game, to achieve a peak performance without being in flow. It's easy enough to do outstanding things one off, but over the length of the game, to achieve a game peak performance, then it would be difficult to do that without being in flow.

Twenty-five percent of the athletes did think it was possible to have a peak performance and not be in flow. For some, this made the performance "really, really hard. It's like you die", as said a rower. "Working harder, and mentally working harder, trying to control everything that's happening", explained a swimmer. Two cyclists said they could achieve good results through good form and/or fitness. One of them said, "I've had really good results because of such good form, and I've been totally drifting off, mind-wise." A runner said that in his shorter races he could achieve peak performance:

> "Things happen and you've reacted positively, or you've gone through everything that could possibly happen, so when an event happens during a race you know what to do and you've got the energy and ability to do it."

A rugby player saw peak performance being possible through having opportunities made for you, however he said that "all my top performances came from achieving flow." Another rugby player, who later changed his mind about thinking peak performance could be achieved without flow said,"You're playing well, and you're fit and everything, but it's not that higher stage that is flow."

In summary, most of the athletes interviewed thought they could only achieve peak performance while in flow. For the 25% who thought otherwise, peak performance was seen as being achieved through such things as hard work, being very fit, having good form, having things well planned out, or through having opportunities made for you.

Peak Experience and Flow

Seventy-one percent of the athletes said peak experience occurred with flow. One idea expressed by several athletes was that for an experience to be enjoyable (and therefore a peak experience), it generally involved being in flow state, where one felt great doing the activity, and therefore the two were intertwined. A rugby player expressed it like this: "When you get into a flow sort of situation, you're involved with everything; it takes being

totally involved to get enjoyment out of it, to enjoy it." A triathlete went further in her description to bring out the interdependence even more clearly:

> I think they definitely go together because times I can remember even not having won events, when I've thought I've excelled--I've always enjoyed it, I've always got a thrill out of doing what I did--and I felt great doing it, so that flow was there, and the experience was great.

A dialogue with a field hockey player clearly showed how she saw the two experiences being related, and how flow helped create a peak experience:

Interviewer: Is that what defines the greatest moment, is it a really outstanding achievement against the odds?

Athlete: Yeah, I think it is.

Interviewer: And does that involve flow, that sort of experience?

Athlete: Yes. Because, the greater the challenge, the more concentrated you have to be and the more on task, so definitely yeah.

Not all athletes saw the two experiences being necessarily related, with 29% saying peak experience could occur without flow. An experience may have been defined as a peak one because a goal that had been set had been achieved, as said this rugby player: "I didn't play exceptionally but that was one thing I wanted to achieve, it was like a goal you set." Or, a great result may have been achieved, as a cyclist commented: "I would still have won the gold medal and that would have made it a peak experience."

A factor influencing athletes' responses was how they defined a peak experience. For a triathlete, this is what he saw peak experience as: "either exceeding your expectations or winning a big race, an important event in your career". Obviously, this is what will be a moment of highest happiness and fulfillment for many athletes, and such achievements can conceivably occur, at least in some athletes' minds, without flow. The following quotation by a track cyclist supports this idea:

> You can feel like you're groveling all the way and in a way that sort of gives you that peak experience, 'coz you know you've groveled, you've pushed yourself that far that you've nearly fallen off the bike, and you feel far from fantastic, but you still won.

For other athletes, it was not winning that made something a peak experience but just getting to the starting line, especially when that involved overcoming great odds. One runner did just that in getting to the start line of a major international marathon, and had this to say:

> When I got to the starting line it would already have been a peak experience without even having experienced flow or anything, because it would be the experience of the competition, so I don't think that necessarily is related to flow.

Another factor involved in determining a peak experience was the nature of the event itself. A rugby player saw the unpredictable nature of his sport influencing the flow-peak experience relationship:

> Because of the nature of the sport, there are so many other factors involved; if it was golf or something like that I think you could draw a direct relationship. But for a sport where luck plays a big part, where injuries and where all sorts of team work plays a big part, then flow state is not directly related to peak experience.

Obviously, the flow-peak experience relationship is complex, and ultimately dependent on the perceiver as to it's nature. The general impression found from the athletes' responses was that most often the two experiences go hand-in-hand, but not necessarily in the eyes of some performers.

The Interdependence of Flow, Peak Performance, and Peak Experience

Trying to understand the relationship between flow, peak performance, and peak experience is a complicated task. Some of the athletes' comments on this relationship are included below, because they shed light on the idea of an interdependence between the constructs.

"Peak experience would be getting the medal which is the result of the peak performance, which happens only because of flow", said a cyclist, indicating a progression from one experience to the next. A swimmer echoed this idea of a progression: "For me it's a progression--flow leads to the performance, the performance leads to the experience." This idea of one experience leading to the next, and onto the third, came through many of the athletes' comments.

One distinction that came through the discussions on the relationship between the constructs was that of process versus product. A triathlete saw the relationship as thus:

> I think flow is a state, and maybe the other two are outcomes. Peak performance is a result . . . to me they read like a result. A check back, how have I done? Whereas the other one is there.

The idea that flow is a process, and peak performance and peak experience products, or results, is a way of viewing the relationship held by the investigator, and may be worthy of future attention.

One final quotation, from a cyclist, is a fitting way to end: "If you manage to put the three together, you'd be world champion. That's the way I see it."

CHAPTER V
DISCUSSION

This investigation was designed to examine the flow state as experienced by elite athletes. This chapter discusses the results in light of the four purposes of the investigation. These purposes were: (1) to examine how flow is experienced by elite athletes; (2) to examine possible antecedent and preventive flow factors; (3) to examine which of these antecedent and preventive flow factors athletes perceive themselves having control over; and (4) to investigate the relationships between flow, peak performance, and peak experience. Following discussion of these four purposes, a proposed model of the flow state as it is predicted to occur for elite athletes, based on the findings from this study, is presented. Following this, methodological considerations of the present study, and recommendations for future research are discussed. Practical implications for helping improve athletes' awareness of flow, and enhancing their ability to achieve flow, are then recommended. This chapter concludes with a discussion of the lessons learned by the investigator from doing this study, and a summary of the main findings.

Purpose 1: The Experience of Flow by Elite Athletes

Underlying the motivation to conduct this study was an interest in understanding in-depth how elite athletes experience flow when they are performing in their sport. That is, what is it like for an athlete to be in flow? Is it a state athletes are aware of, and can describe? How do these descriptions fit with Csikszentmihalyi's (1990) model of the flow state?

Analysis of the athletes' responses to questions about what it is like when they are in flow revealed a high degree of association with Csikszentmihalyi's (1990) conception of

flow, thus confirming the hypothesis that athletes' descriptions of flow states would parallel the model of flow described by Csikszentmihalyi. In particular, strong support was found for all eight components of Csikszentmihalyi's flow model and the proposed end result of these components, an autotelic or enjoyable experience. Of the 336 raw data themes extracted from the data, 97% were classifiable into one of Csikszentmihalyi's dimensions. Thus it appears that the flow state as described in the psychological literature is very pertinent to elite athletes' experience of flow.

Some of Csikszentmihalyi's (1990) components of flow were more applicable to the athletes' experiences than others. The end result of all the components, **The Autotelic Experience**, was the most salient dimension, with 96% of the athletes referring to factors classified as producing enjoyment. Three other dimensions captured over eighty percent of the athletes' experiences: the dimension of **Action-Awareness Merging** was referred to by 86% of the athletes, and **Concentration On The Task At Hand** and **Paradox Of Control** were both referred to by 82% of the athletes. The themes within these dimensions that were most relevant to the athletes were: Felt Easy, Totally Relaxed, Endless Supply Of Energy, Things Happening Automatically, Complete Task Focus, Totally Absorbed In What Doing, Enjoying Experience As It Occurs, and Leaves You Feeling Great.

Five of the seven items on the flow scale assessing themes from the four most popular dimensions were rated highly ($M = 9.5+$), lending support through triangulation of the data to the idea that these aspects of flow were most salient to this group of athletes. One item designed to tap into the Action-Awareness Merging Dimension, "I had a deep but effortless involvement", received a slightly lower rating than the others ($M = 9.1$), and seems to be related to the fact that "deep" and "effortless" do not always necessarily go hand-in-hand for some athletes. For example, one rower describing his experience during a flow race indicated,

> "It is hard work, extremely hard work . . . I mean it's exhausting. It takes a lot of energy, I mean your eyes just go ptt! . . . after a race like that, it can take up to three weeks to recover from that kind of race.

Although the idea that when in flow movements seem easy, some athletes were aware of exerting effort during times of flow. In fact, one of the higher order themes in the **Miscellaneous** dimension was Aware Of The Effort. For some athletes, this seems to be part of the enjoyment of flow, as this field hockey player illustrates: "There were times even during that game that you're puffing and blowing and you know you're working, but that's part of the enjoyment. So it's not really effortless." The physical nature of what athletes do may mean that effort awareness is not necessarily absent or even noticeably changed when in flow, although 18 of the athletes did specifically mention that things felt easy when they were in flow. This characteristic of flow may be an individual difference variable, not necessarily a universal aspect for athletes. Or, perhaps the word effortless does not clearly convey what is occurring during flow in physical activities. What may be occurring is an absence of strain and tension, rather than an absence of effort.

The second item that was not rated as highly as the five others designed to assess one of the four most popular dimensions was "I was not worried about failing or doing poorly". This item was included on the advice of Csikszentmihalyi (1991) as a way of assessing the **Paradox Of Control** dimension. Several athletes commented when answering this item that motivation to not fail was a big impetus to their performances, even performances that involved flow. As one rower indicated,

> I was worried about doing poorly . . . ah, that I was going to do a good race, and that I had the skills to do something very good. And all my training had been building it up, building it up, building it up; but I wasn't worried about failing, ah, failing was never the issue, but doing poorly versus the opposition, producing a good enough race to qualify, sure certain anxiety.

Several other athletes commented about having some concern over how well they were going to do. However, upon probing, this anxiety seemed to disappear once they were in the event. Understandably, athletes felt anxiety leading into their performances, particularly the experience described in detail, which tended to be a very personally significant event for them. As one rower jokingly put it, before her world championship win, "It was like--oh yeah, it didn't really matter to me, I mean . . . ". Anxiety before competing is an indication of the importance of the event and it is quite possible that this anxiety contributed to the athletes' motivation to achieve an optimal state, rather than being a negative influence.

Another item included in the flow scale to assess the **Paradox Of Control** dimension was, "I was in control", and the high mean rating ($\underline{M} = 9.5$) given to this item may indicate it is a better way to assess this dimension, at least for athletes. Csikszentmihalyi (1991) suggested the item, "I was not worried about failing or doing poorly" because his understanding of the **Control** dimension of flow is that there is no worry about <u>not</u> being in control, rather than the perception of being in control per se. One of the rugby players description about control supports this idea, and suggests the control aspect may come at an automatic level:

> 'I was in control'--that's very odd because I didn't really feel like I had a lot of control over what I was doing. Obviously I did because I was doing those things instinctively . . . feeling like I was just emerging in places through instinct rather than I had control over what I was doing.

Ravizza (1991) emphasizes "freeing it up, letting it go", as being important for an athlete to get into flow. It may be that by letting go of trying to control the situation that an athlete allows himself of herself to reach flow, a characteristic of which is control. Thus, Csikszentmihalyi's (1990) **Paradox Of Control** may be a very appropriate title for this aspect of flow.

Dimensions of flow not as universally endorsed by the athletes were **Transformation Of Time** and **Loss Of Self-Consciousness.** The time dimension, while relevant to some athletes, was a factor others found inappropriate to their task demands. Swimmers, for example, stated that they were very aware of the pace-clock and used it as a means of obtaining feedback every time they turned at the wall. The loss of self-consciousness was also not a factor some athletes considered part of their experience, although the fine distinction between being aware of self and being self-conscious may be clouding the relevancy of this factor. Csikszentmihalyi (1990) states that during flow there may be a very active role for self, but the "information we use to represent to ourselves who we are" (p.64) is not present. That is, one may be aware of self, but one is less likely to be self-conscious, or self-evaluative, when in flow. Athletes, generally more aware of their bodies than non-athletes, often report having this awareness heightened when in flow. Themes mentioned by the athletes in this sample that illustrate this idea include, "had total control of my body", "body felt great", and "exhilaration of movements-a buzz". They may be less likely than other populations to think about whether this awareness was evaluation-free or not. The self-consciousness item on the flow scale had been changed from the original, "I am not self-conscious" to "I am not concerned with what others are thinking of me" to try to make the distinction between self-awareness and self-consciousness clearer. "I am not self-conscious" was the lowest rated item in the figure skating study (Jackson, 1992), with a mean rating of 7.7; the revised item used in this study received a mean rating of 9.4, indicating that it is a better assessment of this facet of flow. Still, the relevancy of self-consciousness for athletes' flow experiences is not clear, and the relatively low percent of athletes mentioning a theme falling into this dimension (32%) indicates it is not as certain a component of flow to all athletes as the dimensions rated more highly.

Two other dimensions not involving a large number of athlete themes were **Challenge-Skill Balance**, containing themes mentioned 36% of the athletes, and

Clear Goals, with 39% of the athletes mentioning a theme that fit this dimension. One explanation for these relatively low percentages is that these may be aspects taken for granted, particularly by an elite athlete population. Csikszentmihalyi (1991) referred to the challenge-skill balance as the most "generic" characteristic of flow, explaining that the other characteristics become evident as one zooms in on the experience. Since this investigation did "zoom in" in the sense of trying to understand in depth athletes' flow experiences, the challenge-skill balance and also perhaps the clear goals dimension may have been underrepresented because they were more superficial level characteristics of the athletes' flow experiences.

Support was found for the existence of a challenge-skill balance during athletes' flow experiences through the quantitative ratings given to challenges and skills of their flow state performance. Challenges and skills were both at a very high level and evenly matched. Thus, support was found for the second hypothesis in this first purpose of the study. This hypothesis stated that challenges and skills are in balance and at a high level for athletes' flow experiences. The ratings given by the athletes gave strong support to this hypothesis. The high and balanced ratings for challenges and skills were very similar to those given by athletes in earlier studies by the investigator (Jackson, 1992; Jackson & Roberts, 1992). Assessment of challenges and skills thus appears to be a relevant way of assessing flow, or at least the potential for flow to occur, in athlete populations.

To summarize this discussion of the first purpose of the investigation, the analysis of the athletes' flow experiences strongly supported Csikszentmihalyi's (1990) model of flow, both in terms of the components of flow and the operational definition of flow as being a time when challenges and skills are in balance. The exploratory sub-group comparisons also supported the model, as there were very few differences found between the groups, particularly on the quantitative assessments. The only objective rating difference of significance was for the alteration of time item on the flow scale. It does

appear that the time alteration dimension may not be applicable to all sports. At a qualitative level, further differences between athletes were found in relation to how flow was experienced. The fact that there was variance in the percent of athletes endorsing each flow dimension underscores the idea that there is an individual and/or sport-specific difference in how flow is experienced in sport. Examples of such differences include the perception of effort during flow, with some athletes emphasizing that in flow things feel easy and others stating that there is an awareness of effort. How control is experienced also appears to differ, with some athletes indicating worry about how well they are going to do is part of their preparation for an optimal performance.

The richness of the athletes' descriptions about flow state clearly showed that it is an experience elite athletes are familiar with, and value highly. The variety of terms they used to describe flow adds to understanding of this state from an athletic perspective. Being "in the groove", "tuned in", "on auto", or "switched on" may make more sense to an athletic population then being "in flow". Terminology can influence both acceptability and understanding of a phenomenon, and attention may need to be turned to presenting flow in a way that athletes will accept and understand. The dimensions of flow analysis resulted in a clearer specification of the components of flow described by Csikszentmihalyi (1990) as experienced by athletes. The detail provided by the content analysis of the athletes' descriptions of flow experiences allows for a deeper understanding of how the components may operate for athletes. The four dimensions found to be most relevant to the athletes' flow experiences--Autotelic Experience, Action-Awareness Merging, Concentration on Task at Hand, and Paradox of Control--may be most critical to how elite athletes experience flow. The other dimensions proposed by Csikszentmihalyi may be more peripheral to the flow experience of elite athletes. The fact that some percent of the sample cited themes that fit within these dimensions indicates there may be some sport-specific characteristics relevant to how elite athletes experience flow. Future studies may be able to shed more

light on the relevance and centrality of the different dimensions of flow to athletes involved in different sports. This study may thus be the first step toward refining Csikszentmihalyi's model of flow to more specifically describe flow in competitive sport environments.

Purpose 2: Antecedent and Preventive Flow Factors

The second purpose of this study was to move beyond description of the flow state, the focus of Purpose 1, and toward understanding factors which may help an athlete get into flow, as well as those factors which may prevent or disrupt flow from occurring. Because these questions have never been addressed from a research perspective in the sport psychology literature (with the exception of the investigator's initial work with elite skaters), this purpose was framed in the form of open research questions, rather than closed hypotheses. Three questions were asked: (1) What helps an athlete get into flow? (2) What prevents an athlete from getting into flow? (3) What, if anything, disrupts an athlete from flow? Each of these questions were addressed through inductive content analyses of the athletes' responses. Ten dimensions were formed from the raw data themes about what helps flow, nine dimensions from themes about what prevents flow, and seven dimensions from themes about what disrupts flow. There was considerable overlap in the type of ideas expressed by the dimensions from each of the three questions, as shown in Table 15. Therefore, the discussion of these results is presented in the form of general factors found to influence the occurrence of flow, and the way in which each general factor operates to either help, prevent, or disrupt flow is discussed under each factor heading.

Motivation to perform. Being motivated to perform, and to perform well, was important to get into flow, and lacking such motivation prevented flow for some athletes. Within the dimension of **Motivation To Perform**, athletes mentioned themes of having goals, being psyched-up for the performance, and perceiving the event as one of high challenge. Absence of these factors was reason for flow to not occur, since the lack of

these characteristics formed the themes for the **Lacking Motivation To Perform** dimension under the prevent flow analysis. Flow was found to be influenced by motivational state; specifically, high motivation was shown to be important for athletes to get into flow.

Achieving optimal arousal level before performing. One's arousal level before competing was cited as a factor influencing whether or not one would get into flow. Just what optimal arousal level is depends on the particular athlete, a finding well documented in the sport psychology literature (e.g., Gould & Krane, 1992). For example, some athletes needed to be feeling very relaxed before they competed, while others preferred to feel energized if they were to get into flow. In fact, feeling too relaxed was cited as a factor preventing flow for one athlete, a rugby player. But for other athletes, not being relaxed enough was seen as a factor preventing flow. The important point to note from this general factor is that optimal arousal level is important for an athlete to get into flow, and that just what optimal arousal is depends on the particular athlete.

Precompetitive and competitive plans and preparation. An athlete's preparation for competition was a factor highly relevant to whether or not he or she would get into flow. Rated equal highest in percent of athletes having themes that fit into this dimension for the help flow analysis, this factor appeared important for a large percentage of the sample. Further, **Problems With Precompetitive Preparation** was a dimension in the prevent flow analysis. Several aspects of preparation were mentioned by the athletes. Following precompetitive routines, and event focus plans were important. Feeling totally prepared and knowing clearly what to do was also important. Mental preparation was part of some of the athletes' preparation; for others, it came down to being able to have some time alone before competing. On the negative side, poor precompetitive preparation, or having one's preparation interrupted was detrimental to getting into flow. In addition, having some

major distraction occur close to competition would upset one's precompetitive preparation, and so make it less likely that one would get into flow.

Optimal physical preparation, readiness, and state. This factor was relevant to helping, preventing, and disrupting flow. To get into flow, athletes needed to know they had done the training, needed to feel physically ready. Thus, themes of having done the training, and be in great physical shape came under the dimension, **Optimal Physical Preparation and Readiness** in the help flow analysis. Related to physical readiness, diet and being rested/tapered/peaked were also important. **Non-optimal Physical Preparation and Readiness** was extremely significant in terms of factors preventing flow, with this dimension capturing 75% of the athletes' responses in this analysis. Not being physically prepared or not feeling good physically on the day could prevent flow. Problems with diet intake, and/or with fatigue, particularly from a heavy training load, could also prevent flow. Finally, being injured was also cited as a factor preventing flow. Once in flow, several athletes said it could be disrupted through **Problems With Physical Readiness or Physical State**, such as experiencing a lot of pain, feeling exhausted, or suffering an injury during the game. Clearly, then, the physical aspect of preparation and physical state at the time of performance is very important to athletes being able to get into, and remain in, flow. This influence on flow may be unique to athletes and others whose activity is of a physical nature.

Optimal environmental and situational conditions and influences. This factor was relevant to helping, preventing, and disrupting flow. To enhance the likelihood of flow occurring, good conditions, including such things as a course that suited the athlete, or having good weather was important for some of the athletes. A positive atmosphere, where the athlete felt the crowd behind him or her was also relevant to some. Also included in this dimension from the help analysis were not perceiving outside pressures, and receiving positive feedback from the coach. When environmental and/or situational

conditions were not optimal, flow was less likely to occur. Such thing as extremes of temperature, or if conditions were radically different to what was expected, not necessarily good or bad, could prevent flow. The crowd was cited by two athletes as influencing flow, and the fact that one said too much crowd noise was a negative factor and the other said lack of crowd response was a problem shows that this aspect is dependent on the individual and perhaps also the sport as to the exact nature of its influence. Uncontrollable event influences, such as the type of course, could influence whether flow occurred, as could the influence of opponents in the competition. Stress from outside sources, particularly involving relationships and resulting in emotional upset, were also factors that could prevent flow. It was in the aspect of factors disrupting flow that environmental and situational influences seemed to have the greatest impact, with 71% of the athletes having themes which fit into this dimension. Over half of all the themes mentioned by athletes as factors disrupting flow were grouped in this dimension. There were nine higher order themes in the dimension **Non-Optimal Environmental And Situational Influences**, showing that there is a range of factors that can come into play to interrupt an athlete in flow. These ranged from mechanical failure, to receiving inappropriate, negative, or no feedback, to negative influences from opponents, or to the amount of time left in the event. In addition, some environmental distraction, such as a loud noise or being yelled at while performing could take an athlete out of flow. Consideration of environmental and situational influences is therefore an important aspect in trying to enhance the likelihood of flow occurring, and to prevent it from being disrupted. However, most of the themes represented in this factor were perceived as uncontrollable, a point to be taken up when discussing the results of Purpose 3.

How performance feels and progresses. Whether one feels good during performance versus experiencing the performance going poorly impacts flow state. To increase the chances of an athlete getting into flow during a performance, having a good start may be

important. So said six of the athletes in this study. Experiencing good form, good rhythm, feeling fast, or feeling in control were relevant factors, reinforcing the idea that the performance feeling good makes flow more likely. On the other hand, getting a bad start, making unforced errors, or experiencing the performance going poorly negatively impacted the chances of getting into flow. And once in flow, having something go wrong with the performance, such as a disruption to one's race plan, or making a major error, could bring one out of this state. Again, the physical nature of what athletes do probably influences the relevancy of this factor, as suggested for the factor related to physical preparation and readiness.

Focus. Focusing came through as a factor influencing whether one got into flow or not, and whether one stayed in flow or had it disrupted. Some athletes referred to it simply as being focused, others mentioned self-focus, being absorbed by the situation, or clearing the mind and keeping it simple. One athlete emphasized switching off the conscious and letting the subconscious take over. The label given to the dimension in both the prevent flow and the disrupt flow analyses was **Inappropriate Focus**. The nature of inappropriate focus varied from concentration wandering, to thinking too much, or worrying about competitors rather than focusing on one's own task. Csikszentmihalyi (1990) refers to his dimension of flow, Concentration On The Task At Hand as one of "the most frequently mentioned dimensions of the flow experience" (p.58). It was a little surprising that the Focus dimension did not come through more strongly; it involved responses of between 18-40% of the sample. The eliteness of the sample may have meant that focusing was a taken-for granted skill, and therefore was not recognized as an important an influence on flow state as it may have been by a less elite athlete population.

Confidence and mental attitude. Confidence came through as an important factor in both the help and prevent flow analyses, and doubting or putting pressure on oneself was perceived as being able to disrupt flow. **Confidence and Positive Attitude** contained

the equally highest percent of athlete responses to the question as to what helps one get into flow. Twelve athletes had the raw data theme of "confidence", and another six said something similar to this term, such as "know capable to do whatever need to" and "feel that have ability to be in that situation". Other higher order themes in this dimension included believing you can win, positive thinking, blocking negatives, and enjoying what doing. The prevent flow dimension, **Lacking Confidence/Negative Mental State** involved the opposites of some of these positives, with athletes mentioning lack of confidence, not being able to control one's mental state, and negative thinking as preventing flow. There were only two themes directly tied to confidence in the disrupt flow dimension, self-doubt, and putting pressure on self. In summary, confidence was a very important component of the mental state for getting into flow. One serendipitous finding, or awareness the investigator came across through doing the interviews, was that confidence is an important factor no matter what the ability or achievement level of the athlete. After hearing two world champions talk about still having to deal with confidence issues, it became apparent to the investigator that problems with confidence are not something an athlete "grows out of" as they achieve outstanding levels of success. The fact that many of the athletes referred to confidence as being important for them to be able to get into flow may mean that it is the perception of skill rather than the perception of challenge that is the critical component in the challenge-skill balance for elite athletes. The question of sufficient challenge is probably rarely a factor for athletes competing at this level. More critical, it seems is the belief that one can successfully meet the challenge.

Team play and interaction. For certain of the team sport athletes, getting into flow was influenced by the team. At least as important as the team playing well was the presence of positive team interaction. This involved such themes as trust between players, feeling part of the team, and experiencing a positive feeling on the team. Absence of good team interaction or the team performing poorly could prevent flow, or take one out of a flow

state. This factor is therefore one worthy of attention whenever there is a team component to an athlete's involvement in sport.

Experience factor. One final dimension in the help flow analysis really only involved two themes that could not be classed elsewhere. One athlete mentioned maturity in the sport as relevant to ability to get into flow, and another said you had to have experienced flow before so you knew what it was you were after. The role of experience may have had an influence on the ability of the athletes in this investigation to articulate so well their flow experiences, and to have so many good ideas about how to get into flow, as well as a good awareness of things that might prevent or disrupt flow. The athletes certainly proved to be the "information-rich cases" (Patton, 1990) they were predicted to be. Much was learned about what helps, prevents, and disrupts flow from interviewing elite athletes about their experiences.

When the results of the inductive analyses from this study were compared to those found in the figure skating study (Jackson, 1992), considerable consistency was found. All of the factors found to help enhance flow occurring by the U.S. national champion figure skaters were found to be important to the athletes in this study. **Confidence**, or Positive Mental Attitude, the most important dimension for the skaters, was also the equal most popular dimension in this study. There is strong support from the psychology and sport psychology literature that confidence is critical to performance and persistence (e.g., Bandura, 1977; Feltz, 1988), and from the results of this study, it appears that confidence is also critical to flow. The other most popular dimension in this study, **Pre-Competitive and Competitive Plans/Preparation** did not emerge as a dimension in the skating study, a somewhat surprising finding in retrospect. The importance of mental plans is a robust finding among applied sport psychology research (e.g., Gould, Eklund, & Jackson, 1992; Orlick & Partington, 1988). Other dimensions not found in the skating

study that were found in this study included **Performance Feeling Good**, and **Optimal Environmental and Situational Conditions.**

The questions about factors preventing or disrupting flow were grouped together into one question in the skating study, and the results found seem to indicate that the athletes focused more on the disrupt dimension than the prevent dimension. The themes found in the skating analysis were very similar to those found in the disrupt flow analysis in the present study. And several of the themes found to prevent flow in the present study were not mentioned by the skaters, including **Lacking Motivation To Perform, Non-Optimal Arousal Level**, and **Problems With Precompetitive Preparation**. This seems to indicate that the way the question was worded to the skaters may have led them to focus on what may disrupt flow, rather than address factors that may prevent it occurring in the first place. Therefore, the fact that two independent questions were asked in the present study is a strength of this study, since much valuable information was found relating to factors which can prevent flow from occurring.

Thus, although there was consistency in the factors found in the skating study and those found in the present study to questions of what helps, prevents and disrupts flow, the present study investigated these questions in much greater depth. This resulted in much additional valuable information, as well as confirmation of the findings from the earlier study. The probing in this study was done at a more in-depth level than in the skating study, which involved other content issues in addition to flow. Also, the fact that a larger and more diverse sample of athletes were interviewed probably influenced the fact that more themes were found in the present study. Seventy-three themes were extracted from the data in the figure skating study, compared to 361 themes in the present study. The knowledge base about antecedent and preventive flow factors increased greatly in content and applicability from the analyses of the present investigation.

Although distinct dimensions have been discussed, it should be remembered that flow is a process and so too in all likelihood is getting into flow. Thus, it is most likely that several of the factors presented as influencing whether or not flow occurs interact, rather than operate in isolation. Support for the multidimensional nature of antecedent and preventive flow factors was provided by the finding that each athlete cited themes which fit into several of the antecedent and preventive dimensions. An examination of the proposed dimensions also supports the idea that they can and do interact to influence whether flow occurs. For example, injury/poor training can affect confidence, which in turn affects one's precompetitive preparation, which affects one's arousal level and so on. Therefore, it is important to consider the totality of antecedent and preventive factors to ensure the chances of flow occurring are optimized.

To summarize this second purpose discussion, ten factors were found to influence the likelihood of getting into flow as an elite athlete, and nine of these prevented flow when absent or present in the negative. Further, seven of these factors disrupted flow, again through their absence or presence in the negative dimension. The most important factors for getting into flow were related to precompetitive/competitive plans and preparation, and confidence. The most important factors for preventing flow were non-optimal physical preparation and readiness and non-optimal environmental and situational conditions. This latter was by far the most significant factor involved in the disruption of flow. In relation to the disruption of flow, it was found that more athletes thought that once in flow, they were likely to stay in flow for the duration of the event, rather than coming in and out of this optimal state. The skill level of the sample may have been influential in regards to this finding. The fact that some of the athletes said nothing could break the flow illustrates the outstanding mental skill development of athletes at the top of their sport.

Purpose 3: The Perceived Controllability of Flow

The third purpose of this investigation was to examine the perceived controllability of flow. This purpose was related to the second. As well as knowing which factors help, prevent, or disrupt an athlete from getting into flow, it was deemed important to know which of these factors athletes perceived themselves as having control over. And if flow was perceived as a controllable state, or a state which just happened, or did not happen. As with the second purpose, this third purpose has not been studied in the sport psychology literature, or to the investigator's knowledge, at all, except again for the investigator's initial research with elite skaters. No hypotheses were forwarded, instead an open research question was posed: Which, if any, of the antecedent and preventive flow factors do athletes perceive themselves having control over?

The majority of the athletes (79%) said they thought flow was a controllable state, that is, a state they could purposefully get into, rather than a state which just happened. The extent of perceived controllability of flow ranged from "it just happens" to "I make it happen". It was not possible to determine what was behind this range of perceptions regarding the controllability of flow. There may have been some difference in the mental skill development and self-awareness between the athletes interviewed that accounted for this range of responses. However, the fact that 79% said they thought flow was controllable is probably related to the high skill level of the sample.

Athletes were asked to indicate which of the factors they brought up in response to the help/prevent/disrupt flow questions they perceived themselves as having control over. The majority of these factors, 68%, were perceived as controllable. Differences were found between those factors forwarded as helping flow and those put forward in response to questions about what prevents and disrupts flow. Eighty-two percent of the 170 factors athletes gave to the question about what helps one to get into flow were perceived as controllable. A lower percentage (69%) of the factors preventing flow were perceived as

controllable, and a reverse trend was found for the factors perceived as disrupting flow. Here, only 28% of the factors were perceived as controllable, while the majority (72%) of these factors were perceived as uncontrollable.

Interpreting these results, it seems that the athletes interviewed perceived that whether or not they got into a flow state was very dependent on what they did to either enhance, or detract from the likelihood of flow occurring. That is, flow was perceived as a controllable state. The fact that most of the factors seen as disrupting flow were perceived as uncontrollable can be seen as lending support to this conclusion. If most of the disrupting influences are uncontrollable, then the athletes are saying that they will remain in flow unless some uncontrollable event occurs to take them out of this state. Some support for this idea is given by the finding that over half of the athletes said they were more likely to remain in flow for the duration of their event than to come in and out of this state.

The nature of the sample may have influenced the finding that flow was perceived to be more a controllable than an uncontrollable state. The fact that these athletes have reached the top level of their sport is probably at least partly due to their well developed mental skills, in addition to their physical prowess. Different results may have been found with a less elite athlete population, an expectation that will need to be empirically addressed to find an answer to.

Purpose 4: Relationship of Flow to Peak Performance and Peak Experience

The fourth purpose of this investigation was to examine the relationships between flow, peak performance, and peak experience. Due to the uncertainty and points of disagreement in the literature, an exploratory research question was asked. This question was, are flow, peak performance, and peak experience recognized by athletes as independent, experientially defined events? From examination of both quantitative and qualitative results, it is concluded that there was little support for the independence of these dimensions in the experience of elite athletes. Rather, support was found for the notion

that the there are indefinite borders between the three phenomena, and often, one and the same event may be a peak performance, a peak experience, and involve flow.

The quantitative approach to examining the independence of the constructs involved comparing the mean scores given by the athletes to the items on the Experience Questionnaire to those found by Privette and Bundrick (1991) in their study. The Experience Questionnaire (Privette, 1984) was given to the athletes during the interview, and they were asked to respond to the items in relation to the flow experience they had just discussed in-depth with the interviewer. The questionnaire, as described in the Introduction, is an inventory of descriptors of flow, peak performance, and peak experience, derived from the literature on these constructs. The sample used in Privette and Bundrick's (1991) investigation which found support for the independence of the constructs was 123 college students.

Upon comparing the athletes' mean item scores to scores obtained by Privette and Bundrick, little consistency was found on the two sets of flow scores, while considerable consistency was found between the flow scores of the athletes and some of the peak performance and peak experience scores of Privette and Bundrick's sample. Where there was closeness in mean flow scores of this study and Privette and Bundrick's, it was generally a low level agreement, that is, the items were not rated as very important or relevant to the described flow experiences. On a five item likert scale, ranging from '1' of no importance to '5' or much importance, the 11 items where there was a close match between the two samples received mean ratings by the athletes of between 1.64 and 4.86. With the exception of two items, no ratings over 4.0 were given. The two items given ratings over 4 were agreement that others contributed to the outcome and that one had prior related involvement in the activity.

Privette and Bundrick (1991) derived eight factors from their questionnaire, and they used this factor structure to compare flow, peak performance, and peak experience. They

distinguished flow from peak performance and peak experience mainly on the factor of Play. This factor received a mean rating of 3.59 by the athletes, indicating moderate endorsement. The other two factors found by Privette and Bundrick to characterize flow, Other People and Outer Structure, were not strongly endorsed by the athletes (factor mean scores of 2.94 and 2.53 respectively). However, it is the factors Privette and Bundrick found to not characterize flow where the greatest differences in results between the two studies were found. Privette and Bundrick concluded Significance, Fulfillment, Spirituality, and Full Focus did not characterize flow. Except for Spirituality, all these factors received high mean ratings by the athletes. Further, the factor found to be the most distinguishing characteristic of peak performance, Full Focus, and of peak experience, Significance, were strongly endorsed factors by the athletes (mean scores of 4.3 and 4.2 respectively).

As discussed in the introduction there were discrepancies between the definitions of flow used by Privette and Bundrick (1991) and Csikszentmihalyi (1990) and this investigator. This probably accounts for the lack of expected endorsement of several characteristics of flow from the theoretical literature by Privette and Bundrick's findings, and the lack of support for their findings about flow from the present study. "The last time you played a sport or game", as Privette and Bundrick defined flow, is a very poor definition of flow.

It is interesting that there was close agreement in the definitions of peak performance and peak experience between Privette and Bundrick (1991) and this investigator. The mean item scores of the athletes on the Experience Questionnaire closely matched many of the mean item scores for peak performance and peak experience events in Privette and Bundrick's investigation. Two items from the questionnaire directly assess peak performance and peak experience. These are items 43 and 44, where respondents are asked to check the description that best fits their (a) performance and (b) feeling in the

event. Seven descriptors are given, ranging from extremely negative to extremely positive (see Appendix B). The most positive descriptors match the definitions of peak performance and peak experience used by Privette and Bundrick. They are "personal best" and "highest happiness". These are also very similar to how the investigator defined these constructs. The scores given by the athletes to these questions showed that they endorsed these characteristics in their flow experience. A mean item rating of 6.6 on a 7-point scale for question 43 indicates the characteristic most relevant to the athletes was personal best, since this characteristic was represented by a 7 on the scale. The characteristic below personal best, high performance, represented by a 6, is also indicative of performing at, or close to, an optimal level. The mean item rating given to question 44 was 6.2 on a 7-point scale. Highest happiness is represented by a 7, and another positive experiential descriptor, "joy" is represented by a 6. Since the athletes' mean score fell between these two descriptors, it can be concluded that their flow experience involved very positive experiential qualities akin to peak experience.

Concluding from the results found on the Experience Questionnaire must be done on a tentative level, since there was a small sample size used in the present investigation. In addition to the small sample size, the fact that this study involved an elite athlete population may have influenced the finding of close agreement between the athletes' flow scores and the peak performance/peak experience scores of Privette and Bundrick's respondents. It is probable that many of the flow experiences described by the athletes would also fit the definitions of peak performance and peak experience. A less elite sample may not be as in tune with flow, or experience the high level flow states described by the athletes in this study; states which conceivably could lead to peak performance and/or peak experience and thus cloud any theoretical distinctions between the three phenomena. Taking these cautions into account, the results from the questionnaire, designed to be able to distinguish between

flow, peak performance, and peak experience, do not support the independence of these constructs for this group of athletes.

The question of the independence of the constructs was also addressed through qualitative analyses. After the three constructs had been defined and the athletes had given examples of each in their own experience, they were asked questions about the relationship between flow, peak performance, and peak experience. Seventy-five percent said flow was always part of their peak performances, and seventy-one percent said flow was always involved in their peak experiences. Thus, although some athletes perceived peak performance or peak experience could occur without flow, most saw flow as being part of their optimal performances and experiences.

Flow was seen to be related to peak performance because flow is an optimal state, and generally everything is working optimally for a peak performance to be achieved. When an athlete said he or she had achieved peak performance without being in flow, it was through working extremely hard, being very fit, being able to control the performance, or through luck.

Flow was also related to peak experiences. Enjoyment of an athletic experience generally meant flow was present, and enjoyment at the highest level is what defines peak experience (Maslow, 1968). An enjoyable experience stood out as the most salient characteristic of flow from the dimensions of flow analysis, so it is not surprising that there was perceived interrelationship between flow and peak experience. When peak experience had occurred without flow, it was from the achievement of a valued goal, particularly through having to work hard. Or, from winning, exceeding expectations, or overcoming great odds. These factors would seem to lead to a peak experience after-the-fact, that is, on looking back. For an experience to be enjoyed during it's occurrence, it seems that a state involving enjoyment is more likely to be present than absent.

Trying to understand the relationship between flow, peak performance, and peak experience, is a complicated task. This is probably one reason for the terms having been used interchangeably in the literature. The investigator was impressed at how well the athletes understood the questions designed to tap into their perception of the relationship. One idea discussed by an athlete parallels the investigator's belief as to what may be a useful way to view the relationship. The athlete said, "I think flow is a process, and the other two are outcomes." Although helping to distinguish flow from peak performance and peak experience, there is a problem with viewing the latter two as outcomes. The word outcome is often tied to quantitative results, which do not necessarily define peak performance or peak experience. Newburg (1992) suggested the difference may more precisely be defined as flow being a process and peak performance and peak experience not being processes. Flow as a process involves a series of interrelated events or actions. Peak performance and peak experience also involve a series of events or actions, but these are not necessarily related. For example, a basketball player may perform several outstanding jump shots in a game, leading to his or her viewing the game as a peak performance or a peak experience. However, each jump shot may have been outstanding for different reasons, and the athlete may not have been in flow during making the shots or over the course of the game. If the athlete was in flow, then what happened in between each jump shot would have been different. There would have been a connectedness between all of the athlete's movements, and the athlete would have been in flow during and in between the jump shots. Emphasizing that flow is a process is one way of distinguishing it from peak performance and peak experience.

Although the above discussion attempted to distinguish flow from peak performance and peak experience, it should be remembered that this study found more support for the three concepts to be related rather than distinct. Flow is an optimal psychological state. Peak performance is an optimal performance, and peak experience is an optimal experience.

It makes sense that an optimal psychological state will lead to an optimal performance, and/or an optimal experience. Csikszentmihalyi (1990) hints at the relationship of flow to peak experience through the title of his latest book on flow: Flow: The psychology of optimal experience. In the first study by this investigator on flow, one of the primary aims was to investigate whether flow can help explain how a peak performance occurs, and support was found for this relationship. Since that initial study, the investigator has broadened her perspective to wanting to understand not just optimal sport performance, but also optimal, or positive sport experiences. It seems that flow can help explain how both occur.

Proposed Model of The Flow State in Elite Athletes

From the results of this investigation into the flow state as experienced by elite athletes, a proposed model is forwarded. The model, shown in Figure 1, links together the findings from the different analyses conducted, and is given as a summary graphical representation of what this investigator discovered about flow in elite athletes.

The model brings together the different aspects of flow that were examined in this investigation. Specifically, characteristics of flow, and factors facilitating, preventing, and disrupting flow. On the left hand side of the figure are those factors found to either lead to flow, or prevent flow from occurring. The dimensions resulting from the analyses are presented in the model. To find more specific information about any of the dimensions from the Help or Prevent Flow Analyses, Tables 17 and 19 can be referred to respectively.

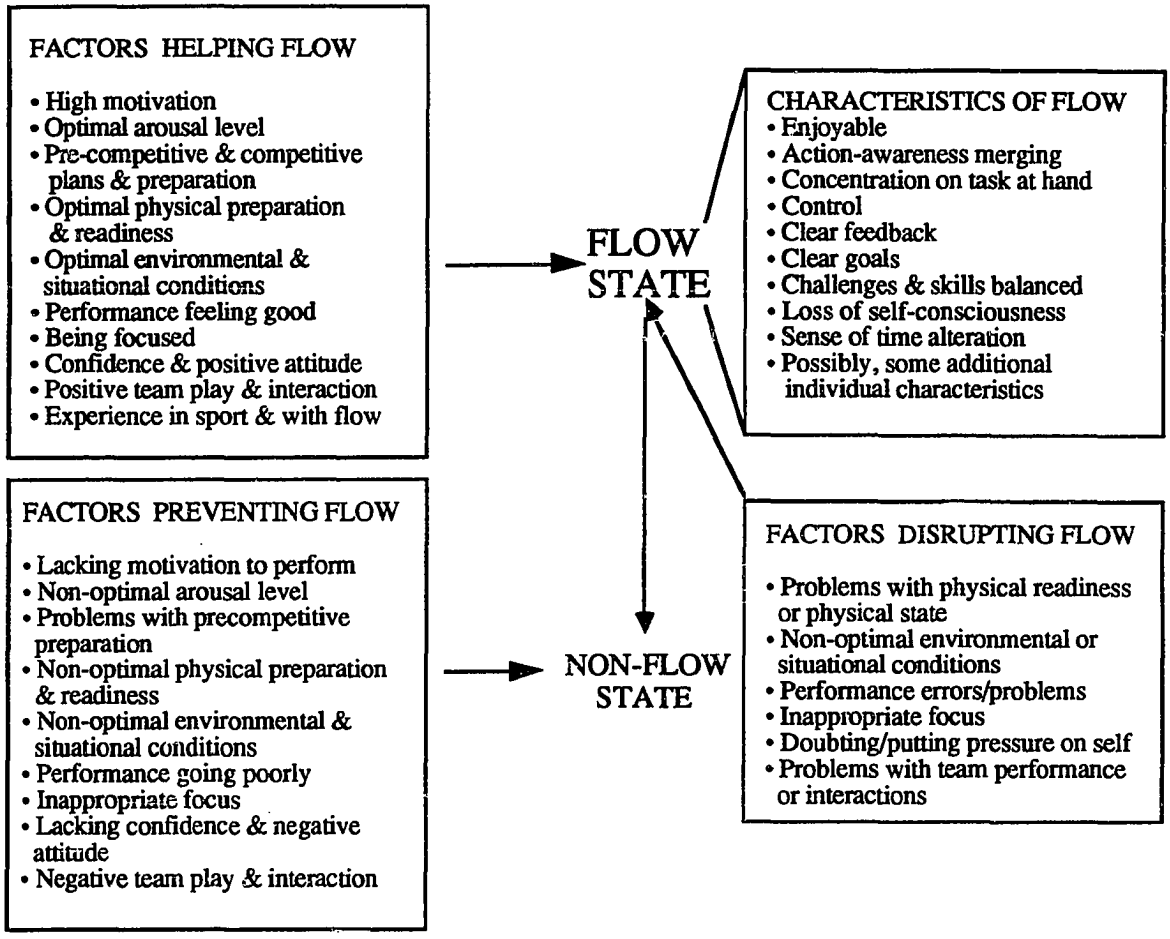

Figure 1. Proposed Model Of The Flow State In Elite Athletes

The presence of several or all of the factors listed in the Help Flow Box are likely to increase the chances of flow occurring. On the other hand, the presence of several or all of the factors on the Prevent Flow Box are likely to lead to a non-flow state.

The upper right hand box identifies the characteristics of flow state, again at the dimension level. More specific information about any of these dimensions can be found in Tables 3 to 12.

Finally, the lower right hand box identifies those factors found in this study to disrupt flow. To find more specific information about any of the Disrupt flow dimensions Table 21 can be referred to. The presence of one or more of the factors listed in the Disrupt Flow Box are likely to increase the chances of flow being disrupted.

It is not possible to give an accurate estimation of how many of the factors need to be present for flow to occur, or not occur, or to know exactly how many of the characteristics of flow need to be present in order for an experience to be a flow experience. The data from the 28 elite athletes interviewed suggests that several of the factors helping flow may need to be present. A range of two to seven factors were cited by the athletes, with a mean of 4.6. For the prevent flow factors, a range of one to six factors were cited, with a mean of 3.4, again suggesting it may be the presence of several of the factors together that influences the occurrence of flow. A mean of 1.6 and a range of one to three factors were cited for the disrupt flow factors, suggesting that the presence of just one of these factors may be enough to disrupt flow. From the dimensions of flow analysis, five or more of the characteristics of flow were cited by 96% of the sample, supporting the idea that it is several of the characteristics occurring simultaneously that makes an experience a flow experience. All of these statements are speculations, since the questions were not directly addressed.

The model is presented as a summary of the major findings of the study, and it's feasibility as a predictor of flow state occurrence and as a descriptor the nature of the flow experience can be assessed in future research.

Methodological Considerations and Recommendations for Future Research

In many ways, this investigation was a learning experience for the investigator, and the process of conducting the research led to much questioning and reflection. Some of the main issues that arose from a methodological standpoint are addressed below. First, the perceived strengths of this study are discussed. This is followed by a discussion of the main limitations the investigator is aware of, and recommendations for future research. A personal reflection upon the methodological decisions, directions followed, and lessons learned from doing this study is given at the end of this chapter.

Strengths of the Study

One major strength of this study is the fact that the participants were very "information-rich cases" (Patton, 1990). A wealth of knowledge about flow was contained in the minds of the athletes interviewed, and hopefully this knowledge has been adequately transferred through the data collection, analysis, and write-up processes. Elite athletes were purposefully chosen because they were expected to be familiar with flow state, to have experienced it fairly often, and to have ideas about what influences it's occurrence. Their understanding of flow was greater than anticipated, and resulted in much depth and breadth of information about flow in elite athletes.

The fact that the research process was meaningful to the participants is a further strength of this study. The athletes perceived that it was their experience that the investigator was most interested in understanding. Even when completing the questionnaires, it was stressed to the athletes that the investigator wanted to know what they thought about the questions, and their orientation often resulted in interesting

discussion about particular items, all of which contributed to the total understanding gained from the research process.

The inclusion of qualitative and quantitative approaches to data collection was a strength of the study, contributing to the credibility of the findings through triangulation of the data. There was consistency between the data generated from qualitative and quantitative analyses. The ratings and percentages lent support to the conclusions drawn from the inductive analyses of the athletes' verbal statements.

Another means by which the credibility of the study's findings were enhanced was through paying attention to the process of "thick description", described by Lincoln and Guba (1985) and Patton (1990). Throughout the writing-up stage of the research, the investigator tried to ensure that sufficient details of the data collection and analysis processes were reported to permit others to judge the quality of the resulting product. The keeping of a reflexive journal assisted in this task.

Rival explanations and negative cases were attended to, as shown in the discussion of the Purpose 4 findings in relation to the findings of Privette and Bundrick (1991), and through the inclusion of themes in the inductive analysis results which did not appear to fit with any of the main dimensions derived from the analysis process. The investigator is aware that her own biases may have prevented her from seeing some other rival explanations and negative cases. One aspect of this study that stood out to the investigator and can be considered a strength of the findings is the degree of consistency between the experiences of the 28 athletes, and between the assimilation of the athletes' experiences and Csikszentmihalyi's (1990) representation of flow. Strong theoretical support for Csikszentmihalyi's model of flow was found. In addition, this study, through detailed analysis and description of flow state and factors influencing it's occurrence, extended knowledge of flow and specified conditions and characteristics of flow that impact upon athletes' experiencing of this state.

Methodological rigor was important to the investigator, and several methods were employed to ensure that the findings of the study would be worth paying attention to, that they would be considered trustworthy (Lincoln & Guba, 1985). As already discussed, these methods included triangulation (of methods), thick description, rival explanations/negative case analysis, and the keeping of a reflexive journal. In addition, others were brought into the research process. Although there was not triangular consensus at the inductive data analysis stage, there were checks from external sources to confirm the plausibility of the findings. An external checker independently categorized the raw data and higher order themes into higher order and general dimensions respectively. There was high inter-rater reliability associated with this task. A peer debriefer was engaged throughout the data analysis and write-up stages, and provided criticism and feedback to the investigator in relation to her thought processes and methodological decisions. Finally, an auditor thoroughly examined the whole research process, from beginning to end, and attested to the dependability and confirmability of the findings.

Limitations of the Study

It is recognized that the particular sample imposes limits of the extent of generalizability of the findings. The investigator tried to remain aware of the idea of "design checks" (Patton, 1990), or keeping the methods and data in context. Reference was made, on several occasions to the fact that particular findings may be relevant only to an elite athlete population, and that further research would need to confirm the findings with a less elite sample.

Further, this was not a quantitatively-based study, and numbers are not large enough to make generalizations from. As discussed in the method section, generalizability is a shaky concept, and working hypotheses are a more accurate and valid description of extrapolations from the data (Cronbach, 1975; Lincoln & Guba, 1985). The findings from

this study are presented as working hypotheses, and their "truth" is an empirical issue to be explored in future contexts.

The retrospective nature of this research lays it open to criticisms of the accuracy of the athletes' reports. It is recognized that there may have been some unintentional distortion of one's experience as it was being retold to me. However, the fact that this study involved athletes' looking back on, and attempting to integrate their most positive sport experiences, makes the data less suspect to recall bias than that which can occur in trivial laboratory studies (Aschcraft, 1989; Brewer et al., 1991). A holistic perspective was focused on to understand flow as a process in as much depth as was possible. To accomplish this perspective, at least for the study of flow, a retrospective approach is the only feasible way to go, as far as the investigator can tell.

A limitation of this study that has come to the investigator's attention after writing up and discussing the results is that the richness and complexity arising from interviewing the athletes about flow was not able to be adequately translated into the written format chosen by the investigator. Part of the problem lies in some of the methodological decisions made. The inclusion of qualitative and quantitative approaches necessarily limited the depth of information that could be addressed at a qualitative level. The inclusion of 28 athletes necessarily limited the depth with which any one athlete's experiences could be addressed. To make sense of the large amount of data, it was necessary to present the data via results of large-scale inductive analyses and through the inclusion of numbers and percentages. What was lost through this process was depth of insight into how flow is experienced by a particular athlete, information which the investigator tacitly knows adds to understanding of the process of flow.

Recommendations for Future Research

First, from the foregoing discussion of the limitations of the present study, several ideas about future research are apparent. First, different samples, employing the same or

similar questions, could add further knowledge and confirm or disconfirm some of the findings from the present study. Some of the sampling methods that could be used include: (a) interviewing less elite athletes, such as college or club level athletes; (b) interviewing recreational, non-competitive athletes; (c) interviewing exercise and fitness participants; (d) interviewing athletes of different ages; (e) interviewing athletes from very different sports, perhaps comparing two such sports to each other; and (f) interviewing a small number of athletes and focusing on understanding and translating the experience in-depth. As well as interviewing athletes, coaches, teammates, and spectators may be able to add to understanding of what the flow state is like, from an observer's perspective. Several of the athletes commented that their coach could tell when they were in flow. Asking coaches and other observers what indications an athlete gave that he or she was in a flow state during a performance, and probing for such things as pre-competitive behaviors could potentially add to the knowledge base about flow.

Different methodologies can be used to understand flow. As well as learning through interview format, questionnaires can provide useful information. Development of a flow scale instrument from the rating scale used in the present study is a research goal of the investigator. In-situ methods of assessing flow are available (Csikszentmihalyi & Csikszentmihalyi, 1988). These involve assessing various psychological states during an activity and their feasibility is currently being assessed in sport psychology research by investigators such as Kimiecik and Stein (1992). Being able to tap into athletes' flow state as it is occurring is an exciting and challenging research goal. As well as direct assessment of the flow state, before and after competition assessments can provide further information about flow closer to the time when the experience actually occurs. Of course, one problem with relying on in-situ methods is that flow does not always, or even frequently occur, and it may take several assessments before a flow state is able to be analyzed.

The interviews conducted with the athletes in the present study contain a wealth of information about flow. Further understanding of flow could be gained by analyzing this data differently. For example, examining in greater depth how a small sample experienced flow, to try to understand better the process. Another way of continuing to build on the present data would be to follow the 28 athletes over the course of their season, asking them to keep a diary after each performance, where they would answer questions about whether or not they experienced flow, and what their experience was like. This season-long assessment could of course also be conducted with a different sample.

Assessment of non-flow states can also provide information about flow. Asking athletes what it is like when their experiential state is at it's worst can illuminate interesting opposite characteristics that can further confirm the nature and conditions of the flow state. Eklund (1991) found an interesting contrast of psychological states by asking wrestlers about best and worst matches, and then following these same athletes over the course of a season, assessing precompetitive and competitive states and relating these to performance.

One question of interest to the investigator after identifying sets of factors that describe flow, or suggest it's antecedent or disruptive influences, is how many of these factors are needed in order for flow to occur (or not occur) ? Also, can the process of flow be different for different athletes? Both of these questions address the nature of the process of flow. A challenging area to understand, but one that may have more light shed on it either through some of the more in-situ methods of assessing flow, and/or via in-depth interviewing.

In summary, there is a wealth of different ways to continue investigation of the flow state, up until recently an experience neglected in sport psychology study.

Practical Implications for Enhancing Athletes' Understanding of, and Ability to Achieve Flow

From the questions addressed in this study, it is possible to draw practical implications that may help athletes understand, be aware of, and achieve more often, the state of flow. Some of the ways of applying the knowledge gained in this study are discussed below.

First, flow is an important state, as evidenced by the athletes' descriptions of what it is like to be in flow. Awareness of flow state, as a term, and as an experience, could be greatly increased through professionals in sport psychology making it a more central topic in their intervention work with athletes. All too often, applied sport psychology professionals follow the lead of the theoretical and academic emphases in the field in focusing on the mental problems of athletes, rather then helping athletes to draw out their potential for optimal mental states, such as flow. Flow needs to be demystified and presented to athletes as an optimal mental state which they can achieve through relevant mental preparation. This study showed that most of the factors the athletes identified for helping them get into flow (and for preventing flow) were within their control. Part of the demystifying of flow may involve use of terms athletes are more familiar with. As the list of terms given by this group of athletes shows, there are many ways to think and talk about flow. To be most effective, the sport psychologist should find out each athlete's understanding of, and experience with flow state, and work from and within this perspective when starting the education process.

Secondly, the major inductive analyses conducted in this investigation resulted in the specification of several mental skill areas that can be focused on as areas of development. From the dimensions of flow analysis, two skills stand out: relaxation and concentration. In fact, a good way of expressing flow state comes from combining these two words: relaxed concentration. Another important area arising from the dimensions of flow analysis is that of enjoyment. While enjoyment is not a mental skill per se, it is dependent on the

creation of an environment conducive to it's expression, and this environment can be positively set up to enhance flow. Attention should be paid to creating an environment where challenges and skills are balanced at a level slightly above the athlete's personal mean. Intervention can thus occur at two levels, modification of the challenges, or change of perspective so that skills can be perceived differently. Confidence is relevant here, and, as evidenced in this study, is central to flow.

One of the most important mental skills relevant to flow that emerged from this study is confidence. It is only when an athlete is sufficiently comfortable with his or her skills that attention can be taken off one's self performing a task and put completely into the task itself. For this to occur, the athlete needs to perceive the task as one he or she can successfully complete, so that the challenge-skill balance occurs. Then, self-consciousness can disappear, focus can be directed entirely toward the task, and total absorption into the activity can create flow. Confidence appears to be an area of skill development relevant to athletes at all levels, since those athletes most likely to possess confidence, the highly elite, as interviewed in this study, did not portray unshakable confidence. Indeed, confidence was an issue of concern to many of the athletes interviewed. This is a skill that may need continual work throughout an athlete's development, in order that the perceived skills can be kept in balance with the ever-increasing challenges.

To increase the chances of flow occurring, attention should be given to all the factors drawn from the antecedent and preventive flow analyses. While this study did not provide a causal connection between factors facilitating/preventing flow and flow state, the investigator believes the ideas of the athletes interviewed are worth paying attention to, and may provide clues as to how flow can be achieved.

In addition to relaxation, concentration, enjoyment, and confidence, discussed above, there are several other areas that can be focused on as areas of development and/or attention. Motivation to perform came through as a dimension affecting athletes' ability to

get into flow. The challenge-skill balance may be the most relevant area to focus on to help ensure an athlete is optimally motivated. Attention to the challenge-skill balance will also influence arousal level. This latter also needs to be at an optimal level for the individual, and exercises to either increase or lower arousal level may need to be practiced by the athlete.

Precompetitive and competitive plans and preparation are important to enhancing the potential for flow to occur. It is important that in the time leading up to performance, athletes are doing what they need to do to feel ready. Focus should be increasingly narrowed onto the performance, and this can only occur when all the organizational and mental preparation facets of the upcoming performance are attended to in an appropriate time frame. A clear plan for the performance is also important, allowing focus to be directed totally toward the doing and bypassing the thinking about doing level of performing.

Preparation goes back beyond the precompetitive stage. An athlete needs to be physically ready for the performance, and this involves months, even years of purposeful, systematic training. It was clear from the athletes interviewed that physical fitness and/or readiness was critical to achieving flow. At a lower skill level, having the necessary physical skills in addition to the physical fitness is probably important. It certainly appears that it would be when considering the centrality of the challenge-skill balance to achieving flow. At the high level of participation the athletes in this study were at, the "skill" is no longer just being able to perform the skills, but being able to push the body to levels requiring incredible physical preparation.

The feeling of the performance was another factor influencing flow state. To increase the chances of one's performance feeling good, attention needs to be paid to all the cues that the athlete can refer to while performing that tell him or her whether or not he or she is

"in sync" with the performance. This becomes part of the preparation factor, both at the physical and mental level of preparation.

Environmental/situational factors surfaced as highly relevant to the achievement of flow state. Many of these factors are uncontrollable or givens in any particular performance, and so the best an athlete may be able to do if conditions are not optimal is be able to quickly and effectively make adjustments to increase the chances of flow occurring, or to get back into flow if it has been disrupted. Development of mental skills such as relaxation, concentration, and refocusing are critical in this regard. Part of the environmental/situational influence can also be controlled through preparation plans. For example, if a particular relationship causes an athlete stress, and emotional stress negatively affects the athlete's ability to get into flow, then the ability of this relationship to cause stress close to the athlete's competition should be reduced, by distancing the athlete from this relationship if necessary.

Another somewhat uncontrollable influence on an athlete's ability to get into flow is the team influence. Ideally, attention should be focused at helping the team as a whole, and all it's members, to achieve flow. If this is not possible (e.g., if a sport psychologist is working with one athlete within a team only), then the disruptive influence team factors can have on the athlete's ability to get into, or remain in, flow, should be minimized by specifying what they are, and then working on developing the appropriate mental skill to negate their influence. For example, if an athlete gets distracted and upset by a teammate's criticism, the athlete can work on her own ability to either block out, or reframe this criticism, and on her ability to refocus. For certain sports, achieving flow may be dependent on the team being in flow, or at least being in focus. Two examples of this from the sports studied in this investigation were a rowing crew and cyclists competing in the team's pursuit event. Because the occurrence of flow can be limited by the team and other

uncontrollable factors, it is probably important to foster realistic expectations in athletes concerning the likelihood of achieving flow on a regular basis.

In summary, this investigation offers many recommendations at a practical level that, when applied systematically and purposefully, can increase the potential for an athlete to experience flow. The recommendations cover many different facets of an athlete's preparation, and to be most effective, may require the assistance of a sport psychologist in determining how to develop an environment, both internal and external, conducive to flow. Coach involvement is also recommended, since many of the coach's behaviors can influence whether an athlete gets into, or out of, flow.

Lessons Learned From the Investigation

As previously discussed, the investigation was a learning experience for the investigator. The following is a personal reflection on doing this type of research, and is included to highlight some of the issues faced by the investigator, that may help extend understanding of what is involved in trying to conduct a study of this type.

First, the careful preparation and thorough familiarity with the interview guide helped the interview process greatly. The investigator always had the guide with her when doing the interview, but did not need to actually use it due to being completely familiar with the questions, and their ordering. It was only when the interview got to a point of the athlete answering a questionnaire that the guide was directly referred to. This helped the flow of the interview and kept the interviewer in tune with what the athlete was saying. At the same time, knowing the progression of the questions kept the interviewer knowing where the interview was going, and she was able to get it back on track if necessary. Therefore, developing a well thought out interview guide is recommended when doing such research.

Second, conducting this research confirmed to the investigator that there is so much to be learned from interviewing as a mode of data collection. While the questionnaires were useful to obtain a quantitative understanding of an issue, their contribution at a level of

understanding was minimal in comparison to the open-ended interview questions. In fact, in future research the investigator may refrain from including quantitative assessments because of the potential to lose some of the depth and richness to be gained from talking to people. This compromising of the qualitative data may occur either at the time of the interview or in the analysis and write-up stages. In the present investigation, it is believed the actual interview process was minimally interrupted by the questionnaires, but it is felt that there was some sacrificing of the context and meaning of each interview because of the number of interviews that had to be synthesized and the fact that there was quantitative data to examine in addition to the 760 pages of single-spaced interview transcripts.

Another issue in relation to being able to communicate to the reader what was learned from the interviews involves the number of interviews conducted and analyzed in any one study. Twenty-eight interviews was about 20 to many to undertake a truly interpretive investigation, where the context and meaning of what each person says is addressed hermeneutically. That is, where the understanding of a text is a continual process of going between the specific parts and the global meaning, so that context and purpose are fully understood for each case. Maintaining a focus on a unique case orientation (Patton, 1990), a goal of qualitative inquiry, seems to be dependent on number of cases included in the investigation.

Apart from the difficulties imposed by the number of subjects and the inclusion of quantitative data, it was found a challenging task to try to communicate the full impact of what was learned from doing the interviews. The tacit knowledge (Martens, 1987) of the investigator in relation to understanding flow is greater than what she feels she has imparted to the reader. The only way this investigator perceives she will be able to impart this knowledge is to abandon current acceptable methods of scientific reporting and include more of the researcher in the presentation of the research product. Martens refers to philosopher Michael Polayni's heuristic paradigm of knowledge, where a triad is formed

between the subject of inquiry (focal problem), the tacit knowledge (subsidiary awareness) gained from the inquiry, and the person, or investigator, who links the focal problem and the subsidiary awareness together. Objectivity denies subsidiary awareness and the integrative powers of the investigator. The present investigator felt constrained by the demands of what is currently perceived as acceptable scholarly inquiry and subsequently does not believe enough personal contact and insight came through the analysis or write-up stages of the research. In contrast, the investigator felt very involved at the data collection stage. She felt very connected with the athletes, and knows that what transpired between investigator and interviewee was a valuable part of the study and influenced what was understood about flow by investigator and interviewee. Unfortunately, little of this understanding through interaction seems to have come through the later stages of the research process, due to the fact that there was uncertainty to its acceptance by the scientific community. The investigator can see clearly that qualitative research involves much more than a type of method of data collection if it is to impart the full extent of its potential for increasing understanding of a phenomenon. It also has to involve a new perspective on what science is, and thus demands that the philosophical issues behind the method issues be addressed.

Finally, whether one does qualitative research at a methods only level or in a truly qualitative spirit, it is very time-demanding and labor-intensive research. However, the rewards are great, and despite the critical issues addressed above, the investigator found the research process to be an experience of much learning and significant personal gain. Going into the interviews, the interviewer was somewhat apprehensive about whether or not the athletes would grasp onto what the interview questions were about, and wondered whether flow would be a concept foreign or familiar to their awareness. Almost without exception, the athletes clicked into a type of "ah-ah" connection with the experience the investigator was trying to draw from them at the start of the interview. In a couple of the

interviews, this awareness came later and was evidenced by a clear growth in self-awareness about experiential states during performance. One athlete who realized during the interview that she probably had more control over flow occurring than she had up until then realized thought she would be able to increase the frequency with which she got into flow by working on it, and thanked the investigator at the end of the interview for helping to make her more aware of the process.

The fact that the interview was a learning process for both interviewer and interviewees is a strength of this study, demonstrating the power of this type of research to effect change at a personal as well as a research level. Self-awareness is key to flow in that one needs to be in tune with oneself and with what one is doing to experience flow in that activity. There were several examples during the interviews when an athlete would comment directly about having experienced some growth in self-awareness. For example, one said, "Talking about all this stuff makes me think more about how you feel, the actual feelings."

When commenting to an athlete at the conclusion of her interview how impressed the investigator had been with how open everyone had been about discussing flow, she said, "It's an opportunity that someone wants to talk about" and went on to agree that people don't generally question athletes on their experience. Another said at the end of her interview how it meant such a lot to be able to talk about flow, and how it was wonderful to be able to communicate this type of experience. She said, "It feels like you're talking a language that like wow, somebody else understands that, it's hard to describe." Athletes expressed interest in learning about the results of the study, as exemplified in the following quote: "It must be <u>so</u> interesting. Like you talk to people in different sports and everything? It would be really interesting to hear what you decide after all of it."

The willingness and openness of the athletes towards the interview was probably the most gratifying aspect of the process from the investigator's perspective. The investigator often went into the interviews with somewhat shaky knees and pounding heart, due to the

fact that she was interviewing some of the world's best athletes. Almost without exception, the athletes were very interested and challenged by the interview questions, and very willing to share their experiences. Gaining access to top performers may not be as difficult as it seems to be perceived in sport psychology. Certainly, if the topic is one of relevance and importance to the athlete, the investigator has credentials promoting trustworthiness, and the research process is meaningful, there may be more openness to research involvement from the elite athlete population than currently perceived.

Conclusion

Flow is a psychological process involving a state of total absorption into an activity and with experiential characteristics that make the experience so intrinsically rewarding that the experience of flow becomes the goal in and of itself. Flow was experienced by the elite athletes in this investigation in essentially the same way that the state has been defined and described by Csikszentmihalyi (1990). The eight dimensions of flow plus the end result of an autotelic experience were applicable to the experience of flow related by the athletes. Not all dimensions were of equal relevance, those found to be most relevant to the athletes were the total concentration on the task at hand, the action-awareness merging, the paradox of control, and the end result of the autotelic or enjoyable experience.

Flow was perceived as a controllable state by the majority of the athletes. All athletes recognized that many of their own behaviors influenced whether or not flow occurred. In addition to these controllable behaviors, athletes perceived certain uncontrollable influences on their achievement of flow. Flow was not easily distinguishable from peak performance or peak experience. At one level these three phenomena can be distinguished in that flow can be defined as a psychological state, peak performance an objective optimal performance standard, and peak experience a subjective optimal experience. However, the distinctions become blurred in most of the athletes' experiences, because of how closely intertwined they are. Flow was most often associated with both peak performance and with peak

experience for the athletes in this study. While not necessary for either peak performance or peak experience in some athletes' eyes, the inclusion of flow lifted an experience to a higher level and was generally perceived as the critical component in both peak performances and peak experiences.

Finally, flow was a very important and influential state to all of the athletes interviewed. The experience of flow in performance was important to continuing motivation and investment in an activity, even at the level these athletes were competing at, where the external rewards for performance were very tangible. Enjoyment came through as the most salient characteristic of flow states, a finding in accordance with Csikszentmihalyi's (1990) understanding and descriptions. The importance attached to flow by the athletes interviewed, athletes at the top of their sport, due to its positive influence on both performance and enjoyment of the experience clearly demonstrates the significance of this state. Therefore, it is important to continue research into flow, since it appears to be key to positive sport experiences.

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APPENDIX A

INTERVIEW GUIDE: FLOW EXPERIENCES OF ATHLETES

SECTION 1: FLOW EXPERIENCES

I am interested in understanding different states of consciousness athletes may experience while participating in their sport. The questions I will be asking you will be about your experiences during competition or training. Take as much time as you would like with each question. If you don't understand what I am asking you, just ask me to repeat it, or ask it in another way. It's okay to say you don't know, and there are no right or wrong answers. I want to understand how you experience the things I will be asking you about, so please tell me what you think. Some of the questions will ask you to recall previous sport experiences. If you can't remember how you were thinking or feeling just tell me that. Please don't try to guess what an experience was like. Any questions before we begin?

1a) Can you remember an experience in your sport, either in competition or training, that stands out as being better than average in some way, an experience where you were totally absorbed in what you were doing, and which was very rewarding in and of itself?

If athlete can describe an experience, let him/her do so now. If athlete is having trouble coming up with an experience, use following prompts. Otherwise, ask athlete to respond to following quotes after first describing his/her own experience.

Here is how some other performers describe their experience at such times:

i) "My mind isn't wandering, I am not thinking of something else. I am totally involved in what I am doing. My body feels great. I don't seem to hear anything. The world seems to be cut off from me. I am less aware of myself and my problems."

ii) "My concentration is like breathing. I never think of it. I am really quite oblivious to my surroundings once I get going. When I start I really do shut out the whole world. Once I stop I can let it back in again."

iii) "I am so involved in what I am doing. I don't see myself as separate from what I am doing."

1b) Have you ever experienced something similar to the ideas expressed by these performers? How was your experience similar to, or different from, the experiences described here?

- Please describe to me in as much detail as you can what was happening during this time when you were totally absorbed in what you were doing. What was the situation, what were you doing, what was your inner experience like?

2. What do you remember being aware of during this time?

3. What were the most distinguishing characteristics of this experience?

4. Did you have any specific goals going into this situation?

5. Were you aware of these goals while you were performing?

6. How did you feel afterwards?

6. How challenging was what you were doing? Please rate the challenges of the situation:
(Probe: What was the challenge for you?)

	Extremely High									Extremely Low
Challenge:	10	9	8	7	6	5	4	3	2	1

7. How skilled did you perceive yourself to be at this particular time? Please rate your skills in this situation:
(Probe: Skills relative to the challenge. .)

	Extremely High									Extremely Low
Skills:	10	9	8	7	6	5	4	3	2	1

8. Please indicate whether the following items were relevant to your experience. Give each item a ranking from 0-10, where 0 = not at all relevant, 5 moderately relevant, 10 extremely relevant.

a) My attention was focused entirely on what I was doing _____
b) I knew clearly what I was supposed to do _____
c) My mind and body seemed to be working in perfect unison ____
d) It didn't take an effort to keep my mind on what was happening ____
e) I got direct clues (feedback) as to how well I was doing _____
f) I had a deep but effortless involvement _____
g) I was in control _____
h) I was not self-conscious _____
i) Time seemed to alter (either slow down/speed up) ____
j) I really enjoyed the experience _____
k) I was at the cutting edge between my ability & the skills I was performing ____

(Discuss athlete's responses to items)

9. Please respond to the following items, rating how important each item was to your experience. (Privette Experience Questionnaire)

10. Do you have any names or terms that you use to describe this type of experience, when you are totally absorbed in what you are doing?

11. Have you heard of the term, "flow"? What does being in flow mean to you?

I am going to use the term flow to describe (as we have been discussing) a state of consciousness where you become totally absorbed in what you are doing, so much so that you may become unaware of things you normally notice. It is a state of concentration so focused that it amounts to absolute absorption in an activity, and the resulting experience is very rewarding or enjoyable.

12. How often do you experience flow while you are a) competing? b) training?

a) COMPETING:

Never	Once A Year Or Less	A Few Times A Year	Several Times A Year	Many Times A Year	Nearly Always	Always
1	2	3	4	5	6	7

b) TRAINING:

Never	Once A Year Or Less	A Few Times A Year	Several Times A Year	Many Times A Year	Nearly Always	Always
1	2	3	4	5	6	7

TRANSITION: Now I would like to get into some aspects about flow where I am going to ask you to generate some ideas on how flow is experienced. I am going to be writing down some things as you talk, which I will then ask you to comment on.

13. What factors do you see as being most important for you to get into flow?

- _____ ___
- _____ ___
- _____ ___
- _____ ___
- _____ ___
- _____ ___

- Are any of these more or most important than the others you have mentioned? (* **most important factors**)

14. a) Do you think the flow state is something you can control?

    b) Which, if any, of the factors you have just mentioned as being important factors for getting into flow, do you see yourself as having control over? **(Put a C or UC in space provided). Probe: Why do you think you have control / don't have control over this factor?**

15. When describing your experience earlier, I asked you to rate how relevant some items were to that experience. Could you answer this scale again, but this time rate the importance of each item to your experience in general when you are in flow. Directions: Please indicate whether the following items are important to your flow experiences in general. Give each item a ranking from 0-10, where 0 = not at all important, 5 moderately important, 10 extremely important.

    a) My attention is focused entirely on what I am doing _____
    b) I know clearly what I am supposed to do _____
    c) My mind and body seem to work in perfect unison ____
    d) It doesn't take an effort to keep my mind on what is happening ____
    e) I get direct clues (feedback) as to how well I am doing _____
    f) I have a deep but effortless involvement _____
    g) I am in control _____
    h) I am not self-conscious _____
    i) Time seems to alter (either slows down/speeds up) ____
    j) I really enjoy the experience _____
    k) I am at the cutting edge between my ability & the skills I am performing ____

16. What sort of things make it difficult for you to get into flow?

    - _____ ___
    - _____ ___
    - _____ ___
    - _____ ___
    - _____ ___
    - _____ ___

    Which, if any, of these factors you have mentioned do you see yourself as having control over? **(Put a C/UC in space provided)**

17. Once in flow, do you stay in flow for the duration of your event, or do you come in and out of flow?
(Probe for examples)
What sort of things, if any, break the flow for you?

- _____ ___
- _____ ___
- _____ ___
- _____ ___
- _____ ___
- _____ ___

Which, if any, of these factors you have mentioned as disrupting flow do you see yourself as having control over? **(Put a C/UC in space provided)**

18. Can you get back into flow if it is disrupted? If yes, what do you do to get back into flow?

TRANSITION: That is all I am going to ask you about flow specifically. There is one final section, where I am going to ask you to briefly talk about some things that may be related to flow experiences.

SECTION 2: RELATIONSHIPS BETWEEN FLOW, PEAK PERFORMANCE, PEAK EXPERIENCE

1. Can you tell me about your all-time best performance, the time when you consider you performed your best, regardless of outcome?

2. Do you think you were in flow during your best performance?

3. Have you heard of the term, peak performance? What does this term mean to you? Peak performance is often used to describe those times when you perform at an optimal level. Was your best performance a peak performance?

4. Is flow related to peak performance? Is flow related to performing well in general? Do you always perform well when in flow? Can you perform well and not be in flow?

5. Now can you tell me about another experience in your sport, one characterized by highest happiness and fulfillment?

6. Were you in flow during this time?

6. Were you in flow during this time?

7. Have you heard of the term, peak experience? What does this term mean to you? Peak experience is often used to describe optimal experiences, or moments of highest happiness and fulfillment. Was the experience you just described to me a peak experience?

8. Is flow related to peak experience? Do you always have a peak, or optimal experience, when in flow? Is flow related to positive experiences in general? Can you have a peak experience and not be in flow?

9. How do you see the relationship between flow, peak performance, and peak experience? What makes these three experiences alike? What makes them different?

APPENDIX B

Experience Questionnaire

Directions: Circle the number that best describes the importance of each item to the experience you reported.

1 = no importance 3 = some importance 5 = much importance

1	2	3	4	5	1.	The event involved action or behavior.
1	2	3	4	5	2.	I had prior related involvement.
1	2	3	4	5	3.	The event was spontaneous or triggered & not planned or structured.
1	2	3	4	5	4.	The event was intense.
1	2	3	4	5	5.	A process seemed to "click" on.
1	2	3	4	5	6.	The event was practiced.
1	2	3	4	5	7.	My actions and thoughts were new, not habitual.
1	2	3	4	5	8.	The event seemed an emergency.
1	2	3	4	5	9.	I had clear focus.
1	2	3	4	5	10.	The event involved a personal value.
1	2	3	4	5	11.	I was absorbed in what I was doing.
1	2	3	4	5	12.	I felt a need to continue until completion.
1	2	3	4	5	13.	I was interactive.
1	2	3	4	5	14.	I had a strong sense of self.
1	2	3	4	5	15.	Actions or thoughts just came out spontaneously.
1	2	3	4	5	16.	I felt free from outer restrictions.
1	2	3	4	5	17.	My inner process was clear.
1	2	3	4	5	18.	I was aware of my own power.
1	2	3	4	5	19.	My intentions were strong.
1	2	3	4	5	20.	The event was nonmotivated.
1	2	3	4	5	21.	I felt all together.
1	2	3	4	5	22.	The event involved understanding or expression that was personal.
1	2	3	4	5	23.	I had a sense of personal responsibility.
1	2	3	4	5	24.	The experience overwhelmed other senses and thoughts.
1	2	3	4	5	25.	The experience involved unity or fusion of self with the environment.
1	2	3	4	5	26.	The experience involved loss of self.
1	2	3	4	5	27.	The event was playful.
1	2	3	4	5	28.	Differences were resolved.
1	2	3	4	5	29.	Rules, motivation, & goals were built into the situation.
1	2	3	4	5	30.	The event was fun.
1	2	3	4	5	31.	The event had a spiritual or mystical quality.
1	2	3	4	5	32.	The event was perceptual, rather than behavioral.
1	2	3	4	5	33.	I was receptive and passive.
1	2	3	4	5	34.	I enjoyed another or persons during the event.
1	2	3	4	5	35.	I experienced a loss of time and space.
1	2	3	4	5	36.	The event was an encounter with a person or something outside myself
1	2	3	4	5	37.	The event had great meaning for me.
1	2	3	4	5	38.	Other people influenced the outcome.
1	2	3	4	5	39.	The event was brief.
1	2	3	4	5	40.	The experience was beyond words.
1	2	3	4	5	41.	The experience was its own reward.
1	2	3	4	5	42.	I experienced joy and fulfillment.

Experience Questionnaire (cont.)

43. Check the description that best fits your performance in this event:

___ personal best
___ high performance
___ effectiveness
___ mediocrity
___ inefficiency
___ inadequacy
___ failure

44. Check the description that best fits your feeling in this event:

___ highest happiness
___ joy
___ enjoyment
___ neutrality
___ boredom
___ worry
___ misery

45. What was the role of other people?

___ interfering
___ not present
___ present only
___ contributing
___ essential

46. How do you characterize your feeling afterwards?

___ extremely positive
___ positive
___ neutral
___ negative
___ extremely negative

47. How do you characterize the aftereffects?

___ turning point
___ significant
___ some
___ little
___ none

APPENDIX C

ATHLETE'S INTERVIEW GUIDE

1. How challenging was what you were doing? Please rate the challenges of the situation:

	Extremely High									Extremely Low
Challenge:	10	9	8	7	6	5	4	3	2	1

2. How skilled did you perceive yourself to be at this particular time? Please rate your skills in this situation:

	Extremely High									Extremely Low
Skills:	10	9	8	7	6	5	4	3	2	1

3. Please indicate whether the following items were relevant to your experience. Give each item a ranking from 0-10, where 0 = not at all relevant, 5 moderately relevant, 10 extremely relevant.

   a) My attention was focused entirely on what I was doing ____
   b) I knew clearly what I was supposed to do _____
   c) My mind and body seemed to be working in perfect unison ____
   d) It didn't take an effort to keep my mind on what was happening ____
   e) I got direct clues (feedback) as to how well I was doing _____
   f) I had a deep but effortless involvement _____
   g) I was in control _____
   h) I was not self-conscious _____
   i) Time seemed to alter (either slow down/speed up) ____
   j) I really enjoyed the experience _____
   k) I was at the cutting edge between my ability & the skills I was performing ____

4. Experience Questionnaire (attached)

5. How often do you experience flow while you are a) competing? b) training?

a) COMPETING:

Never	Once A Year Or Less	A Few Times A Year	Several Times A Year	Many Times A Year	Nearly Always	Always
1	2	3	4	5	6	7

b) TRAINING:

Never	Once A Year Or Less	A Few Times A Year	Several Times A Year	Many Times A Year	Nearly Always	Always
1	2	3	4	5	6	7

6. Please indicate whether the following items are important to your flow experiences in general. Give each item a ranking from 0-10, where 0 = not at all important, 5 moderately important, 10 extremely important.

a) My attention is focused entirely on what I am doing _____
b) I know clearly what I am supposed to do _____
c) My mind and body seem to work in perfect unison ____
d) It doesn't take an effort to keep my mind on what is happening ____
e) I get direct clues (feedback) as to how well I am doing _____
f) I have a deep but effortless involvement _____
g) I am in control _____
h) I am not self-conscious _____
i) Time seems to alter (either slows down/speeds up) ____
j) I really enjoy the experience _____
k) I am at the cutting edge between my ability & the skills I am performing ____

APPENDIX D

ATHLETE DEMOGRAPHICS

• Name: _____ Age: _____ M ___ or F ___

• Address: _____

• Telephone: _____

• Highest Level of Formal Education Completed:
Less Than High School ___ High School ___ Technical School ___
Some College/University ___ Undergraduate Degree ___ Post-graduate Degree ___

• Sport: _____

• Years Involved: _____

• Highest Level Obtained: _____

• Number of Years Competed at National Level: _____

• Year First Began Competing at National Level: _____

• Major Achievements in Sport (Placements, Times, etc):

_____

_____

_____

• Placements (& Times, if applicable) at National or International Competitions:

_____

_____

_____

Peer Debriefer Confirmation

This statement confirms that I served as Peer Debriefer for Susan Jackson during her study of athletes' perceptions of flow. My role was to play devil's advocate in such a manner that challenged Susan to articulate her thought processes, her choice of methodology, and her conclusions. It is my impression that Susan has developed and presented a case that follows a logical progression for the reader.

Many of our discussions were based on the thought processes she employed to reach her conclusions. When I challenged Susan to articulate these processes, it was obvious to me that she confronted these challenges thoughtfully. She demonstrated a commitment to reaching an understanding of her own beliefs related to this research. She has articulated to me a logical rationale for the steps taken.

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October 20, 1992

Ms. Sue Jackson
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Dear Sue,

I have completed the independent audit of your doctoral dissertation *Athletes in Flow: The Psychology of Optimal Sport Experience*. It is my understanding that I was to check the dependability and confirmability of your work and I have done so.

To conduct this check I read your reflexive journal, two interview transcripts, and your dissertation. Your methods and your interpretation of the data are exemplary. It is obvious from the thoughts contained in your journal that the interviews were conducted and based on the two transcripts I read, the interviews were of the highest quality. I liked the way you allowed the two athletes to veer off course periodically but you always brought them back to the topic of major concern--flow. It is my opinion that you were sincere and truly committed to finding out what these athletes experienced when in a flow state. Your presentation of the data was objective in the sense that you attempted to compare your flow dimensions with Csikszentmihalyi's dimensions but did not force a fit where none existed. Hence, the dependability of your work is outstanding.

You also did an excellent job in categorizing and interpreting the data. This was no easy task considering the amount of data that you collected via the interviews. I was especially impressed with the categorization of raw data into higher order themes followed by the creation of general dimensions. You used Csikszentmihalyi's work as a guide in this process but you also developed your dimensions based on logical and creative thinking. Hence, your interpretation of the data is certainly acceptable.

In sum, I believe this work to be of the highest quality. The method of inquiry as well as the categorization and interpretation of data is acceptable. I disagree with your belief that you did not adequately present the richness of the data from the athletes' perspective. I thought you did an excellent job in presenting the nature of flow from the athlete point of view. I commend your commitment to this research approach and encourage you to keep digging to find out even more about the flow experience in sport contexts. Congratulations on a job well done!

Sincerely,

Jay C. Kimiecik

Jay C. Kimiecik, Ph.D.
Assistant Professor